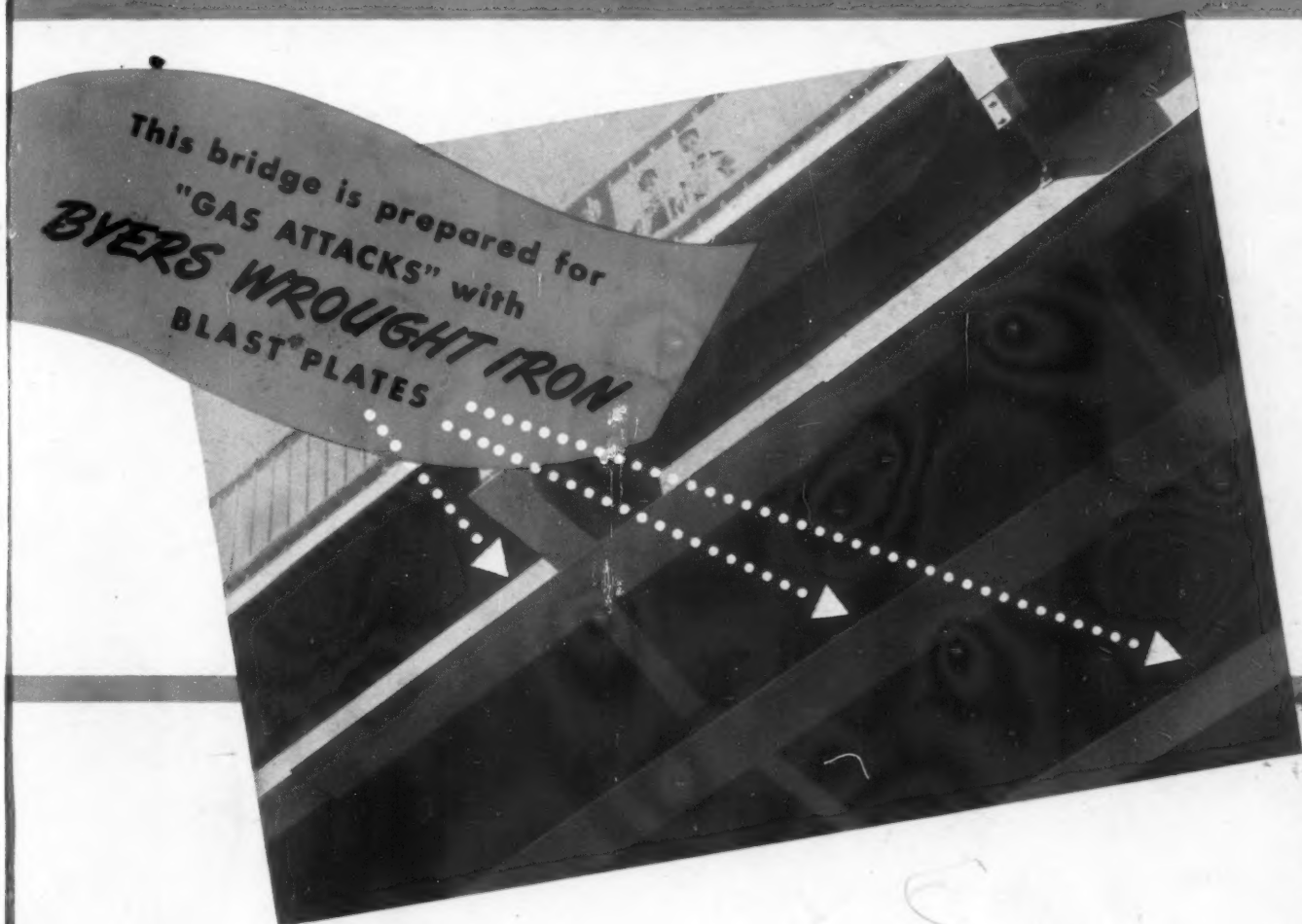


Railway Age

MAY 5, 1945

Founded in 1856

THE LIBRARY OF
CONGRESS
SERIALS
9



This bridge at St. Johnsbury, Vermont, provides an excellent example of balanced design to equalize the life of all parts of the structure. The bridge crosses a river, highways, and a railroad; and since locomotive blast gases would reduce the initial strength and section of the span over the railroad at a faster rate than that of other portions of the bridge, wrought iron blast plates were used to shield the vulnerable parts. As the illustration shows, the plates were applied as "reinforcing" directly on the bridge members themselves.

The reason for using wrought iron will be apparent to any railroader who has seen how well and how long old wrought iron bridges withstood corrosion. In one re-

ported case, in a bridge spanning 14 tracks, the wrought iron members were reported as "still in very good condition . . . no major repairs necessary" after almost 50 years of exposure to locomotive blasts.

The reason wrought iron serves so well is found in its unique structure. The tiny fibers of glass-like silicate slag that are threaded through the body of high-purity iron diffuse corrosive attack, and so discourage pitting. They also help to anchor the initial protective

film more firmly, so it resists the "sand-blasting" action of the cinder-laden exhaust. Since wrought iron is readily formed and welded, it is easy to install.

You will find some further installation and service records in our bulletin, "Wrought Iron in Bridge Construction." We will be glad to send you a copy, on request.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston, Seattle, San Francisco.

BYERS

GENUINE WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE ALLOY STEELS • OPEN HEARTH ALLOY STEELS
CARBON STEEL TUBULAR PRODUCTS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

UNIT TRUCK



PERFECTLY SIMPLE
SIMPLY PERFECT

UNIT TRUCK CORPORATION

140 CEDAR STREET

NEW YORK, 6, N. Y.

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price \$6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 118, No. 18.

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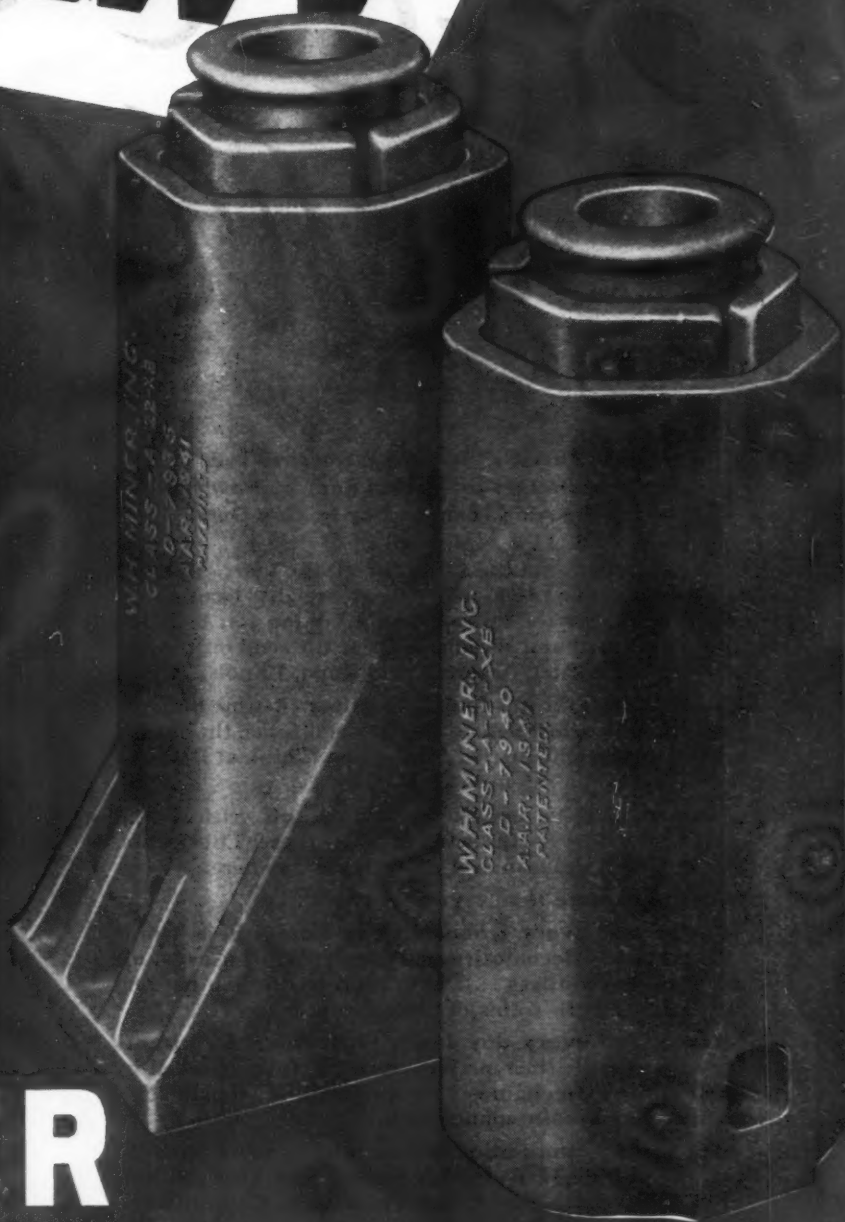
2

ON
N. Y.

matter, January 4, 1933,
ada. Single copies, 25

RAILWAY ACE

QUALITY



MINER

FRICTION DRAFT GEARS

POSITIVE IN
ACTION

STURDY

ABSOLUTELY
RELIABLE

W. H. MINER, INC. CHICAGO



RECORDED SMASH

Missouri Pacific's "Big Jeep" Smashed Load and Speed Marks on Maiden Run . . . Now Hauls Record-Breaking Tonnage Day In, Day Out!

SPECTACULAR SUCCESS! Right at the start Missouri Pacific's new 5400-h.p. Diesel freight locomotives proceeded to set the railroad world talking . . . breaking all existing load and speed records of the road on the run between Texarkana, Arkansas and Dupu, Illinois.

What's more, it was found that the new time bettered by 8 hours the schedule for "symbol" oil trains, the hottest and fastest freight carried by any line. Think of it! Eight hours saved on a 515-mile haul!

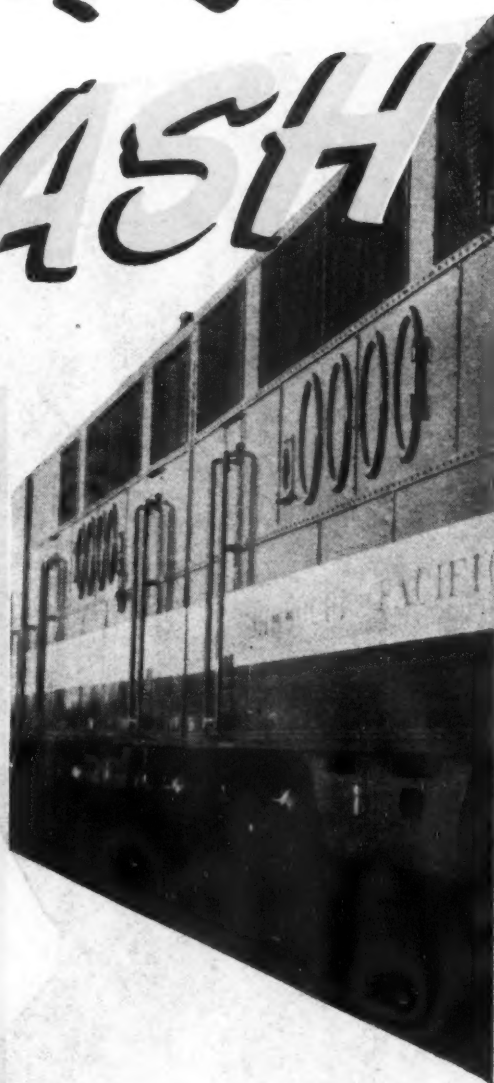
To lubricate its new Diesels during this critical trial period, Missouri Pacific selected Shell Diesel Lubricants, first choice of thousands of operators everywhere.

That was more than a year ago!

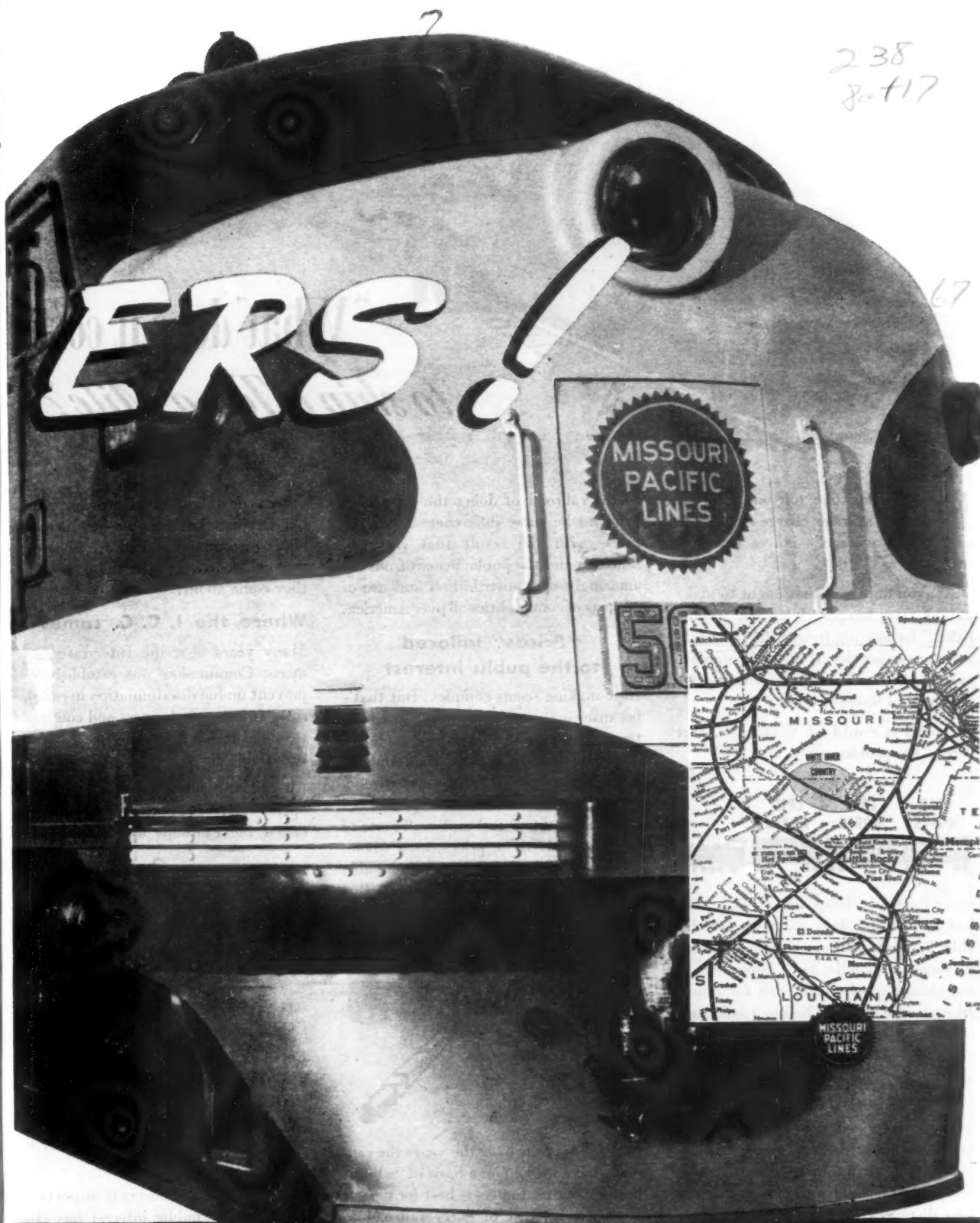
Today and every scheduled day since, these 4-unit 5400-h.p. Diesel locomotives have been operating as 3-unit 4050-h.p. locomotives . . . have been on the job hauling maximum-length trains of loaded cars.

Today and every day since, Shell Diesel Lubricants have been used; their performance carefully checked by Shell lubrication engineers working with Missouri Pacific engineers and maintenance men.

For further information, phone, wire or write Shell Oil Company, Inc., 50 West 50th Street, New York 20, New York, or 100 Bush Street, San Francisco 6, California.



SHELL



238
80-117

67

DIESEL LUBRICANTS



"What does it cost to ship a Ton a Mile?"

FOR moving one ton one mile by rail, the average charge—and note that word "average"—is less than one cent.

O.K., you may say, that ought to make freight rates simple. Why not "sell a ticket" for moving freight, just like selling a passenger ticket? Take the number of tons, the number of miles, the average charge; and figure it out?

We wish it could be that easy. But here is the problem.



Some freight is cheap, heavy, little subject to loss and damage. Some is valuable, light and bulky, difficult, risky and expensive to handle. Such differences in the character of freight call for differences in rate making. No one would suppose that charges should be the same on a ton of coal as on a ton of diamonds.

To charge even as little as one cent per mile for hauling a ton of some of the heavy, low-priced commodities would mean, in many cases, making rates so much higher than they are now that such commodities could not move over the long distances we have in this country and be sold at a profit in distant markets.

On the other hand, rates on more valuable articles can be much higher than the average without making any appreciable difference in the price at which they are sold.

So, to make it possible for all sorts of freight to be moved to market, and at the same time meet the necessary costs

to the railroad of doing the job, there came to be these differences in freight rates—with the result that shippers, railroads and the public benefit from the amazingly wide distribution and use of all sorts of commodities all over America.

"Prices" tailored to the public interest

Rate-making seems complex. But that's because commerce is complex. Rates, or transportation prices, must be made for the movement of tens of thousands of different articles over various routes between tens of thousands of places, all over the country, and under all sorts of conditions. If those prices, as a whole, are too low, the railroads won't be able to meet the costs of doing business. But if transportation is priced too high, the traffic doesn't move—and that is not good for either railroads or shippers.



And so it is that over the years the railroads have worked on a basis of "what is best for our customers is best for us." It is to the interest of every railroad to build up the area it serves. It wants to encourage the growth of industries. It wants to encourage agriculture. It wants to encourage mining, lumbering, every

other type of business. Rates are figured out for just that purpose—to meet the needs of commerce—and are revised to respond to changes in those needs as they come about.

Where the I. C. C. comes in

Many years ago, the Interstate Commerce Commission was established to prevent undue discrimination in railroad rates as between shippers and communities, and to see that rates are "just and reasonable."

All railroad rates are open covenants openly arrived at after discussion between the railroads and shippers. All



rates are published, are filed with the I.C.C., and are open to anyone to see.

But in any case, a shipper who isn't satisfied has the right to ask that the I.C.C. step in and investigate. And more than 250 volumes of I.C.C. reports show how active the Commission has been in this respect.

This principle of tailoring transportation prices to the public interest has stood the test of time—and no man who has made a sincere and expert study of the problem has found a better system for all concerned.



**ASSOCIATION OF
AMERICAN RAILROADS**
ALL UNITED FOR VICTORY

NO. 201 PLAYS "STAND-IN"

On the seventeenth of the month, the boiler room and machine shop of the National Wood Products Company went up in smoke.

The fire loss—approximately \$1,000,000—was important to the company and to a war-torn nation which badly needed wood products. It was also important to the people of Jackson, Miss., where the plant is situated.

The fire had hardly cooled before an Illinois Central representative called to offer the System's service to Rhodes Danehower, resident manager.

Mr. Danehower said: "We have to have dry lumber. War industries demand so much from Mississippi lumber shippers we have to dry our own. Now our boiler shop is wrecked, and the dry kiln damaged. We're stuck."

"Perhaps," the Illinois Central man suggested, "our System might lend you a locomotive for a while."

"Mister," replied Mr. Danehower, "show us your locomotive!"

Two days after the fire, Illinois Central Engine No. 201 and a carload of coal rolled into National Products' sidetrack.

Connected with the repaired dry kiln, Engine No. 201 began pumping steam into the kiln, and National Wood Products Company was again in production.

It kept on drying lumber until Mr. Danehower had rebuilt his boiler room and machine shop. Another essential war industry was doing its bit to beat the Germans and Japs, thanks to the voluntary "first aid" of a railroad system.

As I highball around this country, I find a railroad locomotive pumping steam into a Birmingham factory whose boiler has suddenly split its tubes.

Later on—in Wisconsin—I see a railroad locomotive furnishing steam to cook peas for a crippled cannery.

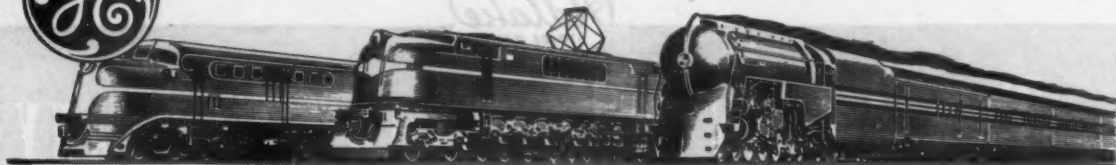
This was the first I'd heard of a railroad locomotive drying lumber. Railroaders do a lot of good deeds that seldom get into print.

—The Trackwalker*

★ ★ ★



Because of their higher-than-average availability, Alco-G.E. diesel-electrics have high "use-ability." On one eastern road where 8 units are averaging 98.7 per cent availability, the utilization factor is 87.3 per cent—additional locomotive-hours are available for emergency work.



AMERICAN LOCOMOTIVE • GENERAL ELECTRIC

Copr., 1946, American Locomotive Company and General Electric Company

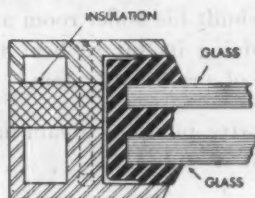
*Reg. U. S. Pat. Off.

112-125-9500

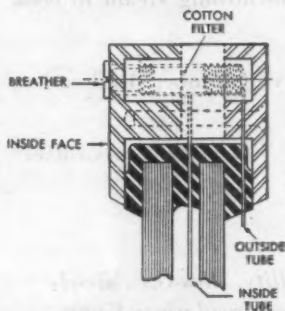


CONSTRUCTION DETAILS

Both frames of Adlake Sash are insulated from each other. This prevents cold from traveling to inside of unit—prevents frosting.



Note inside and outside "breather" tubes. These permit air between panes to adjust to changes in temperature and altitude—prevent clouding *without* use of a dehydrant.



Adlake CURTAINS...should be included. They never shake, rattle or jangle. Swivel tips prevent change in length; rubber shoes stop noise and creeping. Ask for details about Adlake Curtains . . . Curtain Fixtures . . . Sectional Diaphragms . . . Vestibule Curtains.

BUY MORE WAR BONDS

...but eliminate window maintenance

Frosted, clouded windows are an annoyance. Customer comfort and satisfaction are a must. You can get rid of the first and promote the other. Specify Adlake Double-Glazed Sash Units on new or reconditioned cars. They stay clear in all weather.

An exclusive principle—the Adlake Breather—permits the air between the two panes to adjust quickly to temperature and altitude changes.

Adlake Windows use NO dehydrating compound, hence there's none to replace. Except for routine washing or broken pane replacement Adlake Windows require absolutely no maintenance.

Adlake Double-Glazed Windows are again furnished in aluminum. They are designed and produced for new cars or for reconditioning present equipment. They are designed and built to standards that have won them a reputation for superiority throughout years of service. Write for prices and details . . . and specify Adlake.



THE ADAMS & WESTLAKE COMPANY

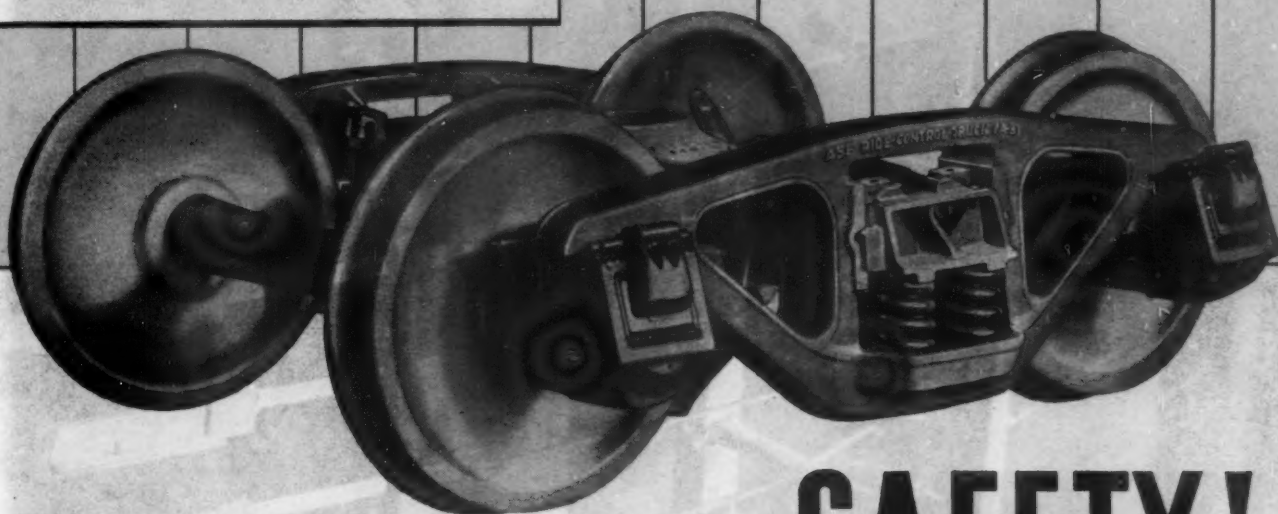
ESTABLISHED IN 1857

ELKHART, INDIANA

NEW YORK · CHICAGO

ADLAKE RAILWAY CAR EQUIPMENT, FITTINGS and SPECIALTIES • DOUBLE-GLAZED ALUMINUM WINDOWS • WINDOW CURTAINS • VESTIBULE CURTAINS • SECTIONAL DIAPHRAGMS • LUGGAGE RACKS • ASH RECEPTACLES • HARDWARE

THE TRUCK FOR TODAY'S NEED... TOMORROW'S SPEED!



FOR MORE LADING. SAFETY!

Today's climbing loss-and-damage figures are variously laid to the inevitable effects of war—acute shortage and rapid turnover of labor; increasing use of worn and reused containers; inadequate packaging; and inattention to sound freight-handling practices. Each *is* a contributory factor. And there is one more—the freight car itself or, more specifically, the *trucks* on which it rides. Much in this direction *can* be done to ease freight smoothly along the rails despite wartime difficulties. The A. S. F. Ride-Control Truck (A-3) gives freight a smooth, easy ride.

LONG SPRING TRAVEL
CONSTANT FRICTION CONTROL

AMERICAN STEEL FOUNDRIES

CHICAGO

MINT-MARK OF FINE CAST STEEL

ENDURANCE



Here the relative time-resistances of various braids, of saturants and of insulations are tested against the destructive influence of ultra-violet light, high temperatures, and simulated wind and rain.

IN COVERINGS

For every braid or wrapping:—
constant Research-testing for
all possible securities of service.

General Cable's research program recognizes no *minor* problems of conductors, insulations, or of coverings. The abrasion hazards in the winding of motor armatures, the longevity of pole line installations, the cutting down of friction in pulling-in building wires—all of these and a host of other problems are subjected to searching scrutiny. For the testing of the textile yarns as raw materials, at various stages of manufacture and in the finished product, specialized practice is employed, using the most sensitive equipment that engineering brains can devise.

GENERAL CABLE CORPORATION



*Manufacturers of Bare and Insulated Wires and Cables
for Every Electrical Purpose*

"Instant Courier"



In one minute . . . Finch Facsimile will transmit any written, illustrated message, half the size of a letterhead, as far as radio will reach. Transmission by wire, depending upon the frequency characteristic of the line used, is somewhat slower. This is both the most rapid and the most accurate means of long-distance high-speed communication. It provides for 1500 words a minute without one error! It makes practical the first law of efficiency: **Never give or take an oral order — PUT IT IN WRITING!**

FINCH TELECOMMUNICATIONS, INC., PASSAIC, N. J.

N. Y. Office — 10 East 40th Street

Finch Facsimile also makes possible an illustrated, printed newspaper by radio, in homes. Over 80 U. S. Patents have been issued to Finch. At present, facilities are entirely devoted to Victory production.



SELF SYNCHRONIZING

finch facsimile

**TOMORROW'S
POWER
TODAY!**



It's the

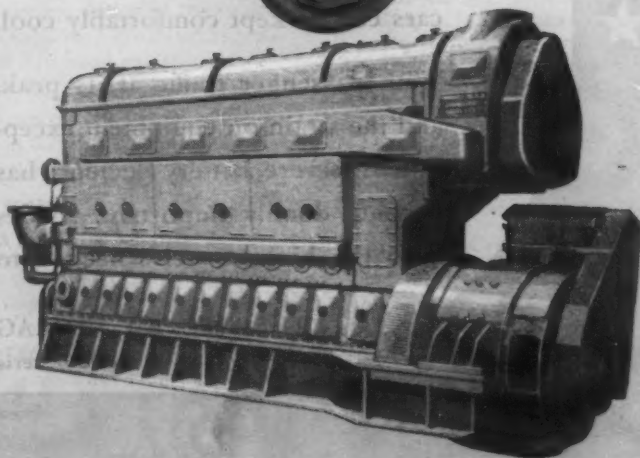
Opposed-Piston

Diesel Locomotive

by

FAIRBANKS-MORSE

A name worth remembering





WHEN THE BATTERIES ARE EXIDES LIGHTS STAY BRIGHT—CARS ARE KEPT COOL

Uniformity is assured when the current for car lighting and air-conditioning is supplied by Exide Batteries. Even during long stops, lights glow strong and steady; and on the hottest days and nights, cars can be kept comfortably cool.

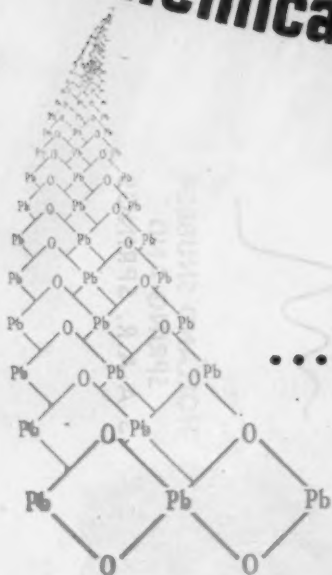
With passenger traffic at its peak, and the strain on equipment exceptionally severe, battery efficiency has become doubly important. Exides have the high capacity needed to

carry the extra load, and their rugged construction enables them to endure the greater hardships of today. You can always count on Exides for dependability, long-life and ease of maintenance. When you buy an Exide, you *Buy to Last*.



THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Uniformity of Chemical Composition



... another real reason why **RED LEAD**
means **Extra Protection against Rust**

Red Lead's outstanding uniformity of performance results not only from its extreme purity but also from its precise chemical composition... lead orthoplumbate. This makes for predictable chemical behavior.

For many years Red Lead has been the standard among metal protective paints because of inherent fundamental properties of the pigment itself.

Among the most important of these is Red Lead's definite chemical composition and uniformity—as distinguished from pigments which have indefinite composition or vary from batch to batch, with resulting possibility of variation in performance.

One reason for this uniformity is that Red Lead is a simple chemical compound, being made from oxygen and high purity metallic lead. Consequently, Red Lead is an extremely pure compound. It contains no corrosion accelerating impurities such as water-soluble salts of chlorides or sulfates.

Uniform composition means dependable performance, day after day, job after job.

Furthermore, Red Lead has the property of counteracting acid conditions, recognized as accelerators of rust. In the presence of various acids, Red Lead forms

insoluble neutral lead salts at the approximate rate at which the acids are supplied. This is true whether the acids originate from acid forming environments, such as gas, smoke and moisture in the atmosphere, or from the decomposition of the vehicle. Thus, a rust inhibiting condition is maintained with a Red Lead paint.

Remember, too, that Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including phenolic and alkyd resin types.

Specify **RED LEAD** for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint. No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

Write for New Booklet

"Red Lead in Corrosion Resistant Paints" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas. If you haven't received your copy, address nearest branch listed below.

* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.



NATIONAL LEAD COMPANY: New York 6, Buffalo 3, Chicago 80, Cincinnati 3, Cleveland 13, St. Louis 1, San Francisco 10, Boston 6 (National-Boston Lead Co.); Pittsburgh 39 (National Lead & Oil Co. of Penna.); Philadelphia 7 (John T. Lewis & Bros. Co.)

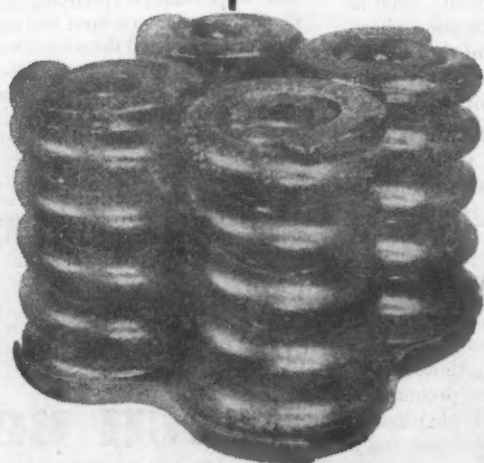
DUTCH BOY RED LEAD

HOLLAND SNUBBER SPRINGS

Swallow up the Shocks

**Vibration and Recoil
Curves**

A.A.R. STANDARD SPRING GROUP



HOLLAND SNUBBER
SPRING AND
3 A.A.R. SPRINGS



Style A-6-A Holland *Volute* Snubber Springs

HOLLAND

COMPANY

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Magor

**DESIGNERS AND
MANUFACTURERS
of Freight Cars
of All Types
Including Air
Dump Cars**

Profits depend upon
economical revenue
producing equipment.
We solicit the oppor-
tunity to quote on
your equipment needs.



MAGOR CAR CORPORATION

50 Church Street

New York 7, N. Y.

AFTER

16 YEARS OF WORK-SHOE TRAFFIC

...this J-M Asphalt Tile Floor is
ready for many more years service

ERIE R.R. Y.M.C.A., SECAUCUS, N. J.

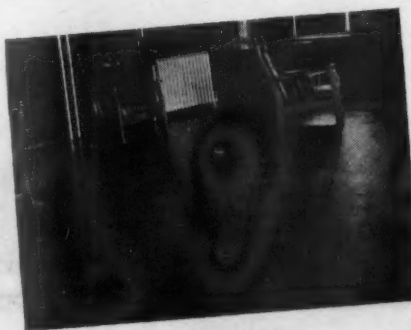
WHEN APPLIED: 1928

MAINTENANCE: None, except usual cleaning

PRESENT CONDITION: Good

REMARKS: Heavy work shoes carrying cinders, dirt, snow and mud have scuffed at these J-M Asphalt Tile Floors for more than 16 years. The Y.M.C.A. at this busy terminal serves 700 to 800 meals daily in the lunchroom (above). The recreation room (right) encounters similar heavy traffic. Yet both floors are today in good condition...and except for cleaning, not one cent has ever been spent for maintenance!

Here is proof that a floor of J-M Asphalt Tile stands up...will outlast years of heavy duty service. Resilient, easy to clean, attractive, it is the ideal flooring for a wide range of railroad uses. For details write Johns-Manville at New York, Chicago, Cleveland, St. Louis or San Francisco.



Johns-Manville

**87 YEARS OF SERVICE
TO TRANSPORTATION**

Insulations

Packings

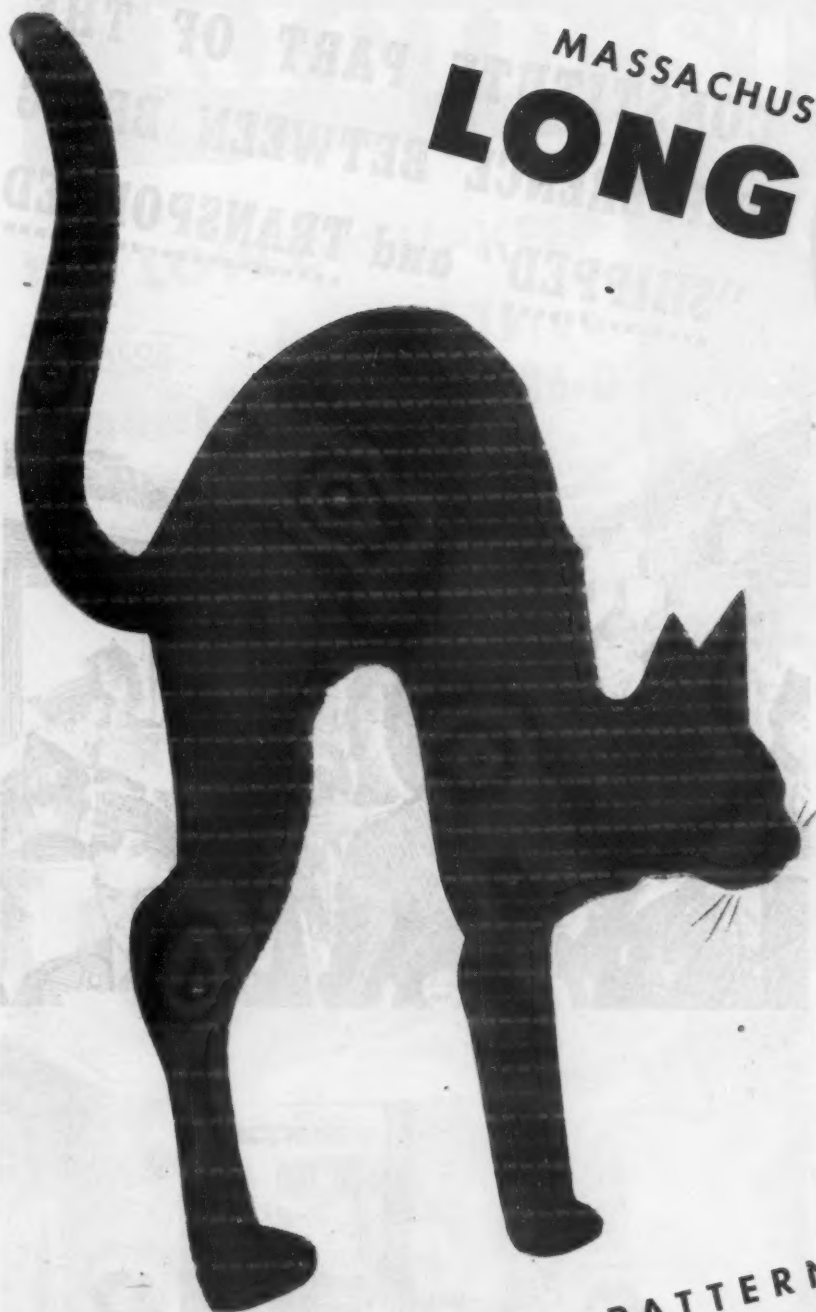
Friction Materials

Refractory Cements

Building Materials



MASSACHUSETTS MOHAIR IS **LONG LIVED!**



The enduring qualities of Massachusetts Mohair's Quality fabrics are being proven daily on many of the nation's leading railroads — under the toughest kind of conditions. A myriad of textures and weaves offer unlimited decorative possibilities for tomorrow's cars and coaches—today! That's why railroads with an eye on future passenger-relations are using Mass Mohair to add the finishing touch to car interiors.

A PERFECT PATTERN FOR PROFIT!

MASSACHUSETTS MOHAIR PLUSH COMPANY

BOSTON, MASS.: 80 FEDERAL ST. • NEW YORK CITY: 2 PARK AVE.
PHILADELPHIA, PA.: BEURY BLDG. • CHICAGO, ILL.: 80 E. JACKSON BLVD.





CONSTITUTE PART OF THE
DIFFERENCE BETWEEN BEING
"SHIPPED" and TRANSPORTED

IT IS said that half of the 12 million men who have seen service never rode on a railroad train before they were inducted. The army word "shipped" almost too accurately describes how it has often been necessary to pack them into all sorts of old coaches.

But they are coming home some day fed up with hardship, and bouncing jeeps, and chow lines and standing room only. They'll want the ease and luxury of fast trains with club cars and diners.

Formica laminated plastic in its many colors and plastic impregnated actual wood finishes and used as table tops, window stools, bar tops and paneling has made many streamlined coaches more luxurious than coaches have ever been. It can guarantee new heights of beauty for the coaches of tomorrow.



FORMICA

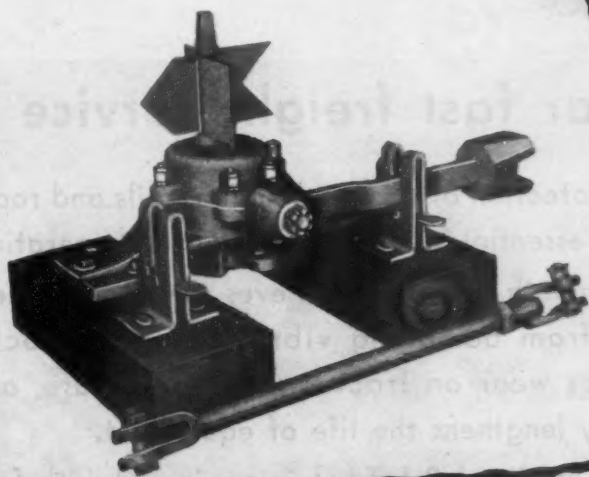
THE FORMICA INSULATION COMPANY
4641 Spring Grove Avenue, Cincinnati 32, Ohio

RIGID STANDS

IT'S LOW ON UPKEEP

RACOR Parallel-Throw
Gearless Switch Stand 36-D

Long service life with minimum of lost motion is assured, wearing parts having extra large bearing surfaces. Throw of points can be adjusted without respiking the stand. This rigid stand is safe and suitable for unrestricted use. In normal operation, working parts cannot be overstressed.



Write for further information on the whole line of Racor products among which are automatic safety switch stands, manganese switch points, switch clips, reversible manganese crossings, frogs, lubricators and many other track work necessities.

Brake Shoe

COMPANY

RAMAPO AJAX DIVISION

230 Park Ave., New York 17, N. Y.

HILLBURN, N. Y.

PUEBLO, COLO.

• NIAGARA FALLS, N. Y.

• SUPERIOR, WIS.

• LOS ANGELES, CAL.

• CHICAGO, ILL.

• SEATTLE, WASH.

• EAST ST. LOUIS, ILL.

• NIAGARA FALLS, ONTARIO

built to
RIGID
STANDARDS

IT'S HIGH ON PROTECTION

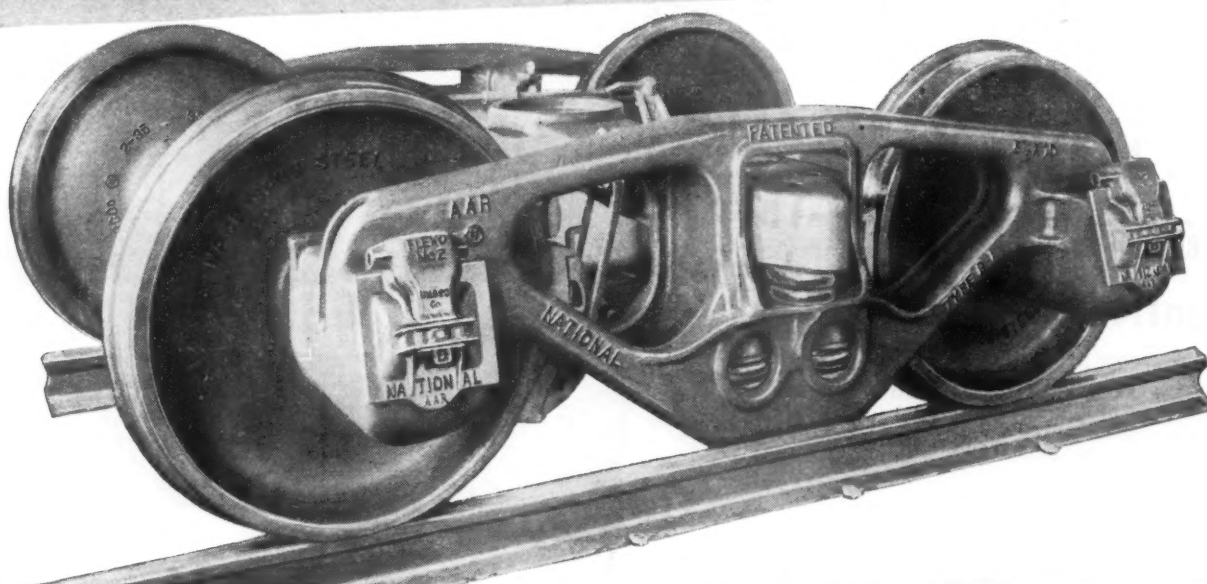
RACOR

Column
Switch Stand 112-D

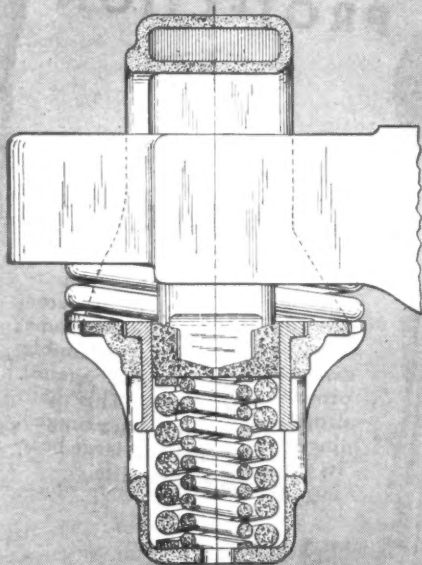
Since hand lever is thrown parallel to track, safety of operator is assured. Lever cannot become disengaged from bracket. Double protection is afforded against dropping of spindle. This main line switch stand is extra rugged. Its simple design and large bearings guarantee long life.



It's here Now!!



The Truck for post-war fast freight service



Section thru Control Unit.
Two Control Units in each frame.

Full protection of cars and lading, rails and road-bed, is essential for economical railroad operation.

A smooth riding car relieves the car and contents from damaging vibrations and shocks, reduces wear on track and car structure, and greatly lengthens the life of equipment.

The National B-1 Truck is equipped with four built-in friction units which control both vertical and horizontal oscillations. No separate snubbers are necessary.

The frictional snubbing action is governed by the load carried, thus assuring a smoother riding car whether light or loaded.

Specify National B-1 Trucks with Dual Control

76 Years Service
to Transportation

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco.

Works: Cleveland, Chicago, Indianapolis; Sharon, Pa., Melrose Park, Ill.

Canadian Representatives, Railway & Power Engineering Corporation, Ltd., Toronto and Montreal



DF

May

vice

and road-
operation.

and can-
d shocks,
ture, and

with four
vertical
snubbers

governed by
other riding

vice
ation

S. CO.

RAILWAY AGE

Lighter -
Stronger -
Better



**And Simplicity itself...
The New Schaefer
EVER-TITE Wear Plate**

The new Schaefer EVER-TITE Wear Plate is easy to install in the side frame bracket. While in service, springs under compression hold it rigidly in place and save wear on the side frame bracket. Simplicity of construction and rugged design make the Schaefer EVER-TITE Wear Plate ideal for high speed freight service.

**Schaefer
Appliances**

**STANDARD
ON MOST
ROADS**

LIGHT WEIGHT DESIGN INSURES MORE THAN CAR LIFE

Schaefer

**EQUIPMENT
COMPANY**

KOPPERS

BUILDING

PITTSBURGH, PA.

DROP-FORGED FOR LIGHT WEIGHT. HIGH STRENGTH. LONG LIFE AND SAFETY

CONSTANT *and* INVARIABLE



This war-born, blended, multi-protein foaming agent for highspeed extinction of gasoline, oil and other serious fires—*has military experience only!* Used extensively by the U. S. Navy for preparedness—and for quickly extinguishing fires on ship-board and at shore bases, MEARLFOAM-5 is the veteran of many successful engagements.

This effective multi-protein foaming agent works with maximum efficiency in any climate or atmos-

pheric condition. It is a good mixer—with any type of water: sea, fresh . . . hard, soft. Whatever the temperature of air and water, the highspeed extinction qualities of its foam are constant and invariable.

MEARLFOAM-5 yields the live, lasting foam with the tough, elastic water-retaining film. When split-seconds count—you can rely on MEARLFOAM-5 to put fire out fast—keep fire out, *permanently!*

Completely safe and non-corrosive—may be used with standard Mechanical Foam-Forming Equipment

**FOAM ON
FIRE OUT...
Stays OUT!**



THE MEARL CORPORATION
153 Waverly Place, New York 14, N.Y.



A PUZZLE FOR OUR SCIENTISTS...

Weatherhead

Firsts

Solving Problems
for Industry

★
ERMETO FITTINGS

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Q-A HOSE END
FITTINGS

★
BRAZED STEEL
FITTINGS

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HYDRAULIC BRAKE
LINES AND
BRAKE FITTINGS

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FIRE-RESISTANT
HOSE ASSEMBLIES

★
THE WEATHERHEAD
T-RING PACKING

HOW TO SAVE YOU A PENNY

HAVE you thought much about performance of small parts in new peacetime products—and how much these parts cost?

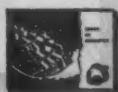
Countless times since 1919 Weatherhead has been assigned the job of saving "a penny a part" for a manufacturer—and has solved the puzzle and delivered a finer part in the bargain. At Weatherhead this kind of thinking begins at the beginning—in the laboratory—where a steadily growing staff is trained to

and marketing factors all as interlocking parts of each job at hand.

One of many examples:—When hydraulic brakes were adopted for the automobile, Weatherhead developed a hydraulic brake line only one-half the size of those previously used, and produced it for less cost to the automotive industry.

That's why we can say, "Look ahead with Weatherhead." We invite you to write our Sales Engineering Department for assistance in solving your postwar parts problems now.

Look Ahead with



FREE: Write on company letterhead for "Soods Of Industry"—

24-page illustrated story of Weatherhead facilities and products ready to serve you.



Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO

Plants: Cleveland, Columbia City, Ind., Los Angeles
Canada—St. Thomas, Ontario



The Car with 9 Lives

Starting high octane gasoline on its way to our airmen, General American cars have crowded nine lifetimes into one. The General American fleet has set new endurance records—with amazingly little time off for maintenance.

Dependability of GATX cars in this emergency service indicates their value to you in competitive days of peace. Your liquid products will get safe, sure and low cost transportation in General American tank cars.

For Your Postwar Products

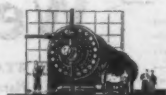
Your company may be developing liquid commodities never shipped in bulk before and difficult to handle. General American will plan with you now the tank cars to carry your products economically and with full protection. Research engineers in all our divisions work with the skill and experience American industry associates with the General American name.



Builders and Operators of
Specialized Railroad Freight Cars



Bulk Liquid
Storage Terminals



Process Equipment
of All Kinds



Pressure Vessels and
Other Welded Equipment



Aerocoach
Motor Coaches



Precooling Service for
Fruits and Vegetables



**GENERAL
AMERICAN
TRANSPORTATION**
CORPORATION
CHICAGO

HAVE A CHAIR!



Chairs are such common things that their importance in the scheme of living is frequently overlooked. There are big chairs and little chairs, beautiful chairs and ugly chairs, comfortable chairs and backbreakers, unusual chairs and ordinary chairs but there is nothing ordinary about Goodform Aluminum Chairs. They are in a class by themselves. They are primarily designed for comfort. Their sparkling aluminum finish is beautiful when new and is easily kept that way even after many years of hard usage. Their sturdy welded construction makes them strong and durable. They will not split, splinter, squeak or pull apart. They will serve for a lifetime.

There is no better investment in seating than a Goodform Aluminum Chair and after the war, there will be one available for every purpose.

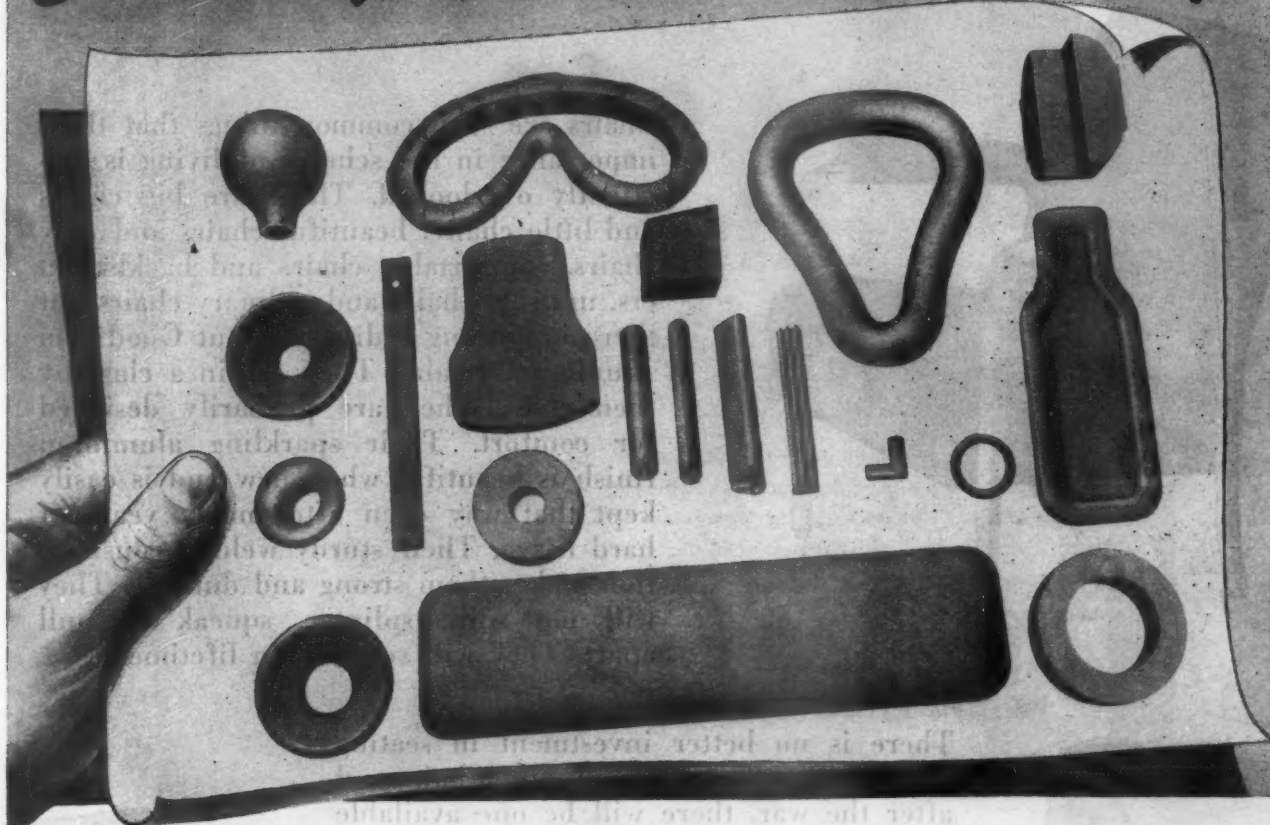


THE GENERAL FIREPROOFING COMPANY

YOUNGSTOWN 1, OHIO

METAL DESKS • ALUMINUM CHAIRS • METAL FILING CABINETS • STEEL SHELVING • FILING SUPPLIES • SAFES • STORAGE CABINETS

Sure... You know Cellular Rubber!



**But ... do you know how it can be
Molded and Shaped to serve you?**

There is scarcely an industry that can't make profitable use of modern engineered Cellular Rubber in its products or processes. It is *available now* - and can be made to order in practically any form - molded to shape, in die cut designs, or in sheets, slabs, strips, cord, tubing, or bonded to fabrics.

Methods developed in our laboratories enable us to control density, tensile strength, resistance to oils and

greases ... chemicals ... oxidation. One or more of these qualities may easily improve your product's efficiency, lengthen its working life.

Basic forms are: SPONGEX* - with interconnecting cells; CELL-TITE* *soft* - with individual cells. Rubberized curled hair or bound fibre is also available in molded and die cut forms for cushioning or packing delicate instruments. Why not send for samples and prices.

*TRADE MARK REG. U. S. PAT. OFF.

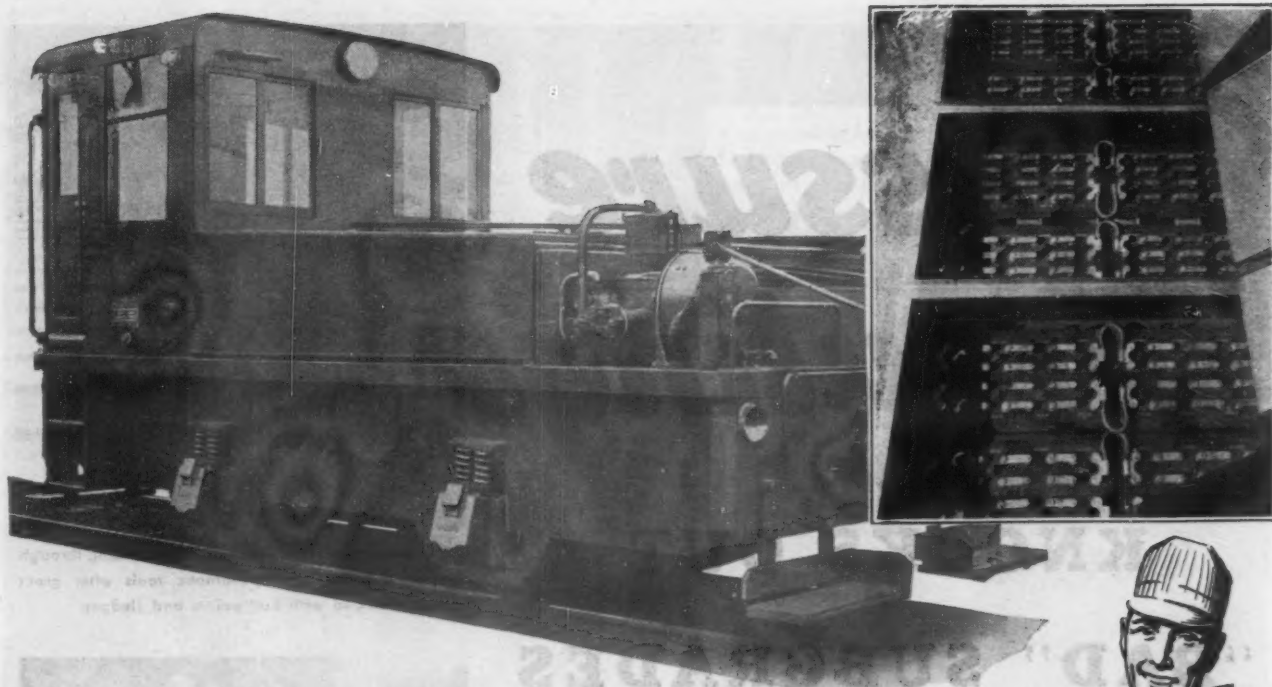
SUGGESTED USES: Dampening Sound or Vibration • Sealing • Insulating • Gasketing
• Cushioning • Weatherstripping • Space Filling • Dust Proofing • Protective Packing

Sponge Rubber Products Co.

121 Derby Place, Shelton, Conn. • Plants in Derby and Shelton, Conn.

Sales Offices: New York • Chicago • Washington • Detroit

WORLD'S LARGEST MANUFACTURERS OF CELLULAR RUBBER AND BONDED FIBRE PRODUCTS

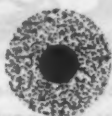


They chose **A BATTERY WITH** *20 years of experience!*



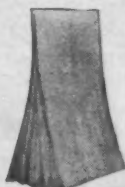
KATHANODE GRID

Double wedge design of grid members gives strength and resistance to peroxidization.



BLACK OXIDE

Unique cores of pure lead give this positive active material unusually long life.



SPUN GLASS MATS

Of exclusive Gould design, these mats are 90% porous yet positively hold active material in place.

When Gould began the manufacture of Kathanode Glassklad batteries in 1925, the use of spun glass mat retainers was a radical battery innovation. Today it is acknowledged to be the best method for retaining active material in the positive plate.

Behind each Gould Kathanode battery of today are 20 years of service in every field where

storage batteries must meet daily cycle demands. It has proved itself time and again to be a better battery... efficient in operation and capable of meeting current needs in excess of rated capacity.

That's why a large midwest utility company chose Gould Kathanode to power its electric locomotive pictured here.

There is a Gould Kathanode that will do a better job for you. Write today for Catalog 100 on Gould Kathanode Glassklad Batteries for Industrial Truck and Tractor Service.

GOULD



SINCE 1898... THE BATTERY PICKED BY ENGINEERS

FOR EXCELLENCE IN STORAGE BATTERY PRODUCTION AT DEPEW PLANT

GOULD STORAGE BATTERY CORPORATION, Depew, New York. Branches: Albany • Chicago • Dallas • Dayton • Evansville • Los Angeles • North Bergen • Rock Island • St. Paul • Sioux City • Louisville

Pressure Grouting

KNOCKS OUT "BAD" SUBGRADES

Pressure grouting has repeatedly passed the most severe tests to establish its efficiency and economy in consolidating water-churning, money-eating subgrades. After many such tests on seemingly "incurable" subgrades where all attempts to drain water pockets had failed, Maintenance of Way Engineers agree:

That the injection of portland cement grout under pressure, forces the water and thin mud out of the pockets, fills them with grout which when hardened, prevents further entry of water and materially increases the load-carrying capacity of the subgrade.

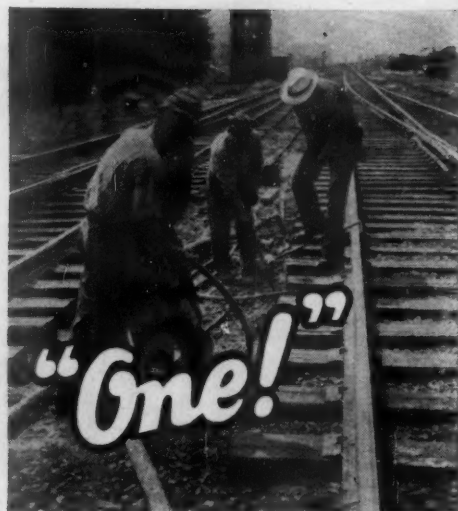
Pressure grouting to stabilize subgrades is a standard maintenance operation on a score of major railroads. It gives positive results and effects consistently important savings in track labor. Work may be done with simple equipment and regular railroad gangs.

Write for illustrated information sheet, "Stabilizing Railroad Track by Pressure Grouting." Free in United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A5a-26, 33 West Grand Ave., Chicago 10, Illinois

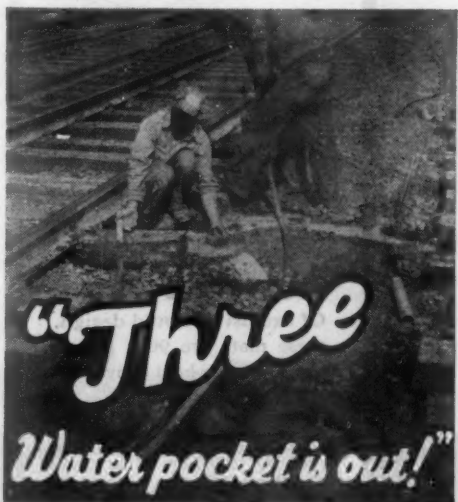
A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work



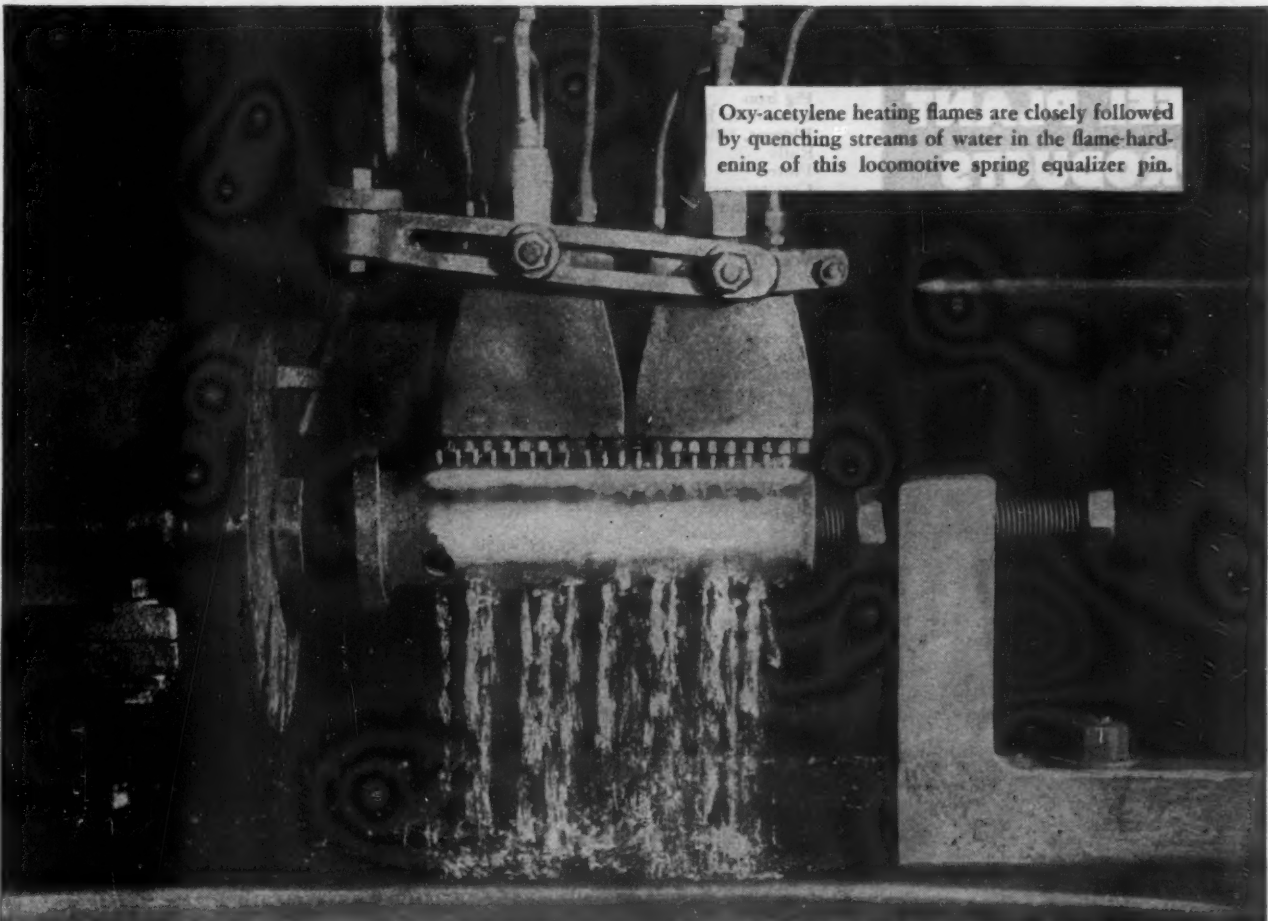
B. & O. gang near Niles Junction, Ohio, drilling through compacted ballast with pneumatic tools after grout holes are started with bull points and sledges.



Discharge of grout is controlled by foot valve at pneumatic grout mixer. Note grout hose passing under rail to avoid interference with traffic.



Grout injected at one hole forces water out of next hole. When water ceases and grout is observed, workmen know grout has made proper penetration.



Oxy-acetylene heating flames are closely followed by quenching streams of water in the flame-hardening of this locomotive spring equalizer pin.

KEEP PARTS IN SERVICE LONGER

By Flame-Hardening

● Oxweld's oxy-acetylene flame-hardening is one of the most effective methods for giving additional endurance to the wearing surfaces of many steel and cast iron parts.

The oxy-acetylene flames, followed by cold water, produce a uniform hardness—controlled to the desired depth—without affecting the chemical composition, ductility or toughness of the core or surrounding areas. Best results are obtained when the base metal is in the carbon range over .40. Not only small parts, but also parts too large to be hardened easily by other methods can usually be hardened by the oxy-acetylene process. The hardened

surface can be confined to a localized area if desired. Flame-hardening can be done using either portable or stationary machines, and operators can be quickly taught to produce uniformly good results.

Ask your Oxweld representative to tell you more about how flame-hardening can be used for shop equipment as well as for locomotive and car parts.

THE OXWELD RAILROAD SERVICE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

Carbide and Carbon Building Chicago and New York



SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

STEEL PLANT PRODUCTS FOR WAR AND PEACE

Bethlehem Plant

STANDARD STEEL-PLANT PRODUCTS

Pig iron
Coke-oven by-products
Bars, blooms and billets—carbon and alloy steel
Tool steels
Structural shapes
Fabricated structural steel

MANUFACTURED PRODUCTS

For peacetime industry—

Castings—steel, iron, brass and bronze; centrifugal cast-bronze sleeves and liners; ingot moulds
Forgings—hammered and hydraulically pressed, all sizes, solid and hollow, for marine and stationary engines, locomotives and machine tools; drop and upsetter forgings for automobile and aircraft engines; seamless vessels for oil refineries, high-pressure steam power plants, and chemical plants
Rolls—steel and cast iron
Tools—rivet sets, punches and dies, chisel blanks and chisels, hot and cold friction saws, steel stamps, slitting shears, shear blades and special tools
Producer gas, gas and Diesel-oil engines; blowing engines
Oil refinery equipment

War specialties—

Gun forgings—3-inch to 16-inch
Shells—3-inch to 16-inch
Bombs—demolition and armor-piercing
Torpedo air-flask forgings
Forged armor
Ship shafting
Turbine rotor forgings
Heavy castings for ship propulsion machinery, big-gun mounts, etc.
Airplane engine forgings
Rocket forgings

Lackawanna Plant

STANDARD STEEL-PLANT PRODUCTS

Pig iron
Coke-oven by-products
Bars, blooms and billets—carbon and alloy steel
Concrete reinforcement bars
Rails
Sheets and strip
Structural shapes
Plates
Sheet piling

MANUFACTURED PRODUCTS

For peacetime industry—

Highway and building specialties
Railway splice bars and tie plates
Fabricated structural steel
Expanded steel joists

War specialties—

Landing mats for air fields
Casings for carrying the wire used in degaussing ships
Steel-plank hatch covers for cargo ships
Hatches, ammunition and tool stowage, service boxes, deck gear lockers and cable clips for escort vessels

Sparrows Point Plant

STANDARD STEEL-PLANT PRODUCTS

Pig iron
Coke-oven by-products
Blooms, billets, slabs
Rails
Plates
Concrete reinforcement bars
Sheets and strip
Tinplate
Pipe
Wire
Nails and staples

MANUFACTURED PRODUCTS

Flanged and dished heads for boilers, tanks, etc.
Fabricated reinforcement bars
Castings—brass and iron
Strand

Johnstown Plant

STANDARD STEEL-PLANT PRODUCTS

Pig iron
Ferro-manganese
Coke-oven by-products
Bars, blooms and billets, carbon and alloy steel
Concrete reinforcement bars
Special rolled sections
Plates
Light rails
Rods, wire and wire products

MANUFACTURED PRODUCTS

For peacetime industry—

Wrought-steel wheels and axles for railway equipment
Trackwork and rail accessories for mine and industrial railways
Steel freight and mine cars
Steel ties
Rail anchors
Highway posts and guard rails
Steel fence posts
Rolled steel blanks for gears, pinions, fly-wheels, etc.

War specialties—

Flywheels and brake drums for tanks
Turbine rotors for ships
Diesel engine heads
Torpedo air-flask heads
Breech-blocks for light artillery
Shell-cap forgings
Breech-ring forgings for 37-mm. guns
Tank tread and connector forgings
57-mm. anti-tank shell forgings
Sub-assemblies for shipbuilding
Heavy calibre shells

Steelton Plant

STANDARD STEEL-PLANT PRODUCTS

Pig iron
Coke-oven by-products
Blooms and billets
Rails

MANUFACTURED PRODUCTS

Heavy steel castings—ship stern frames, propeller shaft struts and the like
Forgings for ships and heavy machinery
Frogs, switches, switch stands, splice bars, tie plates and other accessories for railway tracks
Special track layouts
Fabricated structural steel
Marine oil burners and strainers

Williamsport Division

Wire rope for all purposes

Lebanon Plant

A specialty plant for the manufacture of bolts, nuts, rivets, spikes and other fastenings. Its capacity is 2½ million pieces per day. Its war production includes:

Small-arms gun-barrel forgings
Armor-plate bolts, nuts and studs
Bushings for fuse bodies

Elevating screws for elevating mechanisms of 3-in. AA gun mounts
Fittings for torpedo nets
Flanged bushings for tank treads
Forgings for fuel pump drive gears, fuel pump drive gears for tachometer drive-shafts, impeller shafts, and many other types of small upset forgings for aircraft engines
Gun-barrel forgings for 30-calibre Enfield rifles; for 30-calibre machine guns; and for 50-calibre machine guns
Piston rod forgings for tank engines
Striker pins and other parts for bomb mechanisms
Tank and truck forgings

Tulsa Plant

For peacetime industry—

Pumping units and other equipment for the oil industry

War specialties—

Elevating mechanisms for 75-mm. guns
Landing-barge winches
Marine pumps
Shells for heat-exchange apparatus used in making synthetic rubber

Corsicana (Texas), Plant

Oil field equipment and supplies

Pacific Coast Plants

South San Francisco, Los Angeles and Seattle

STANDARD STEEL-PLANT PRODUCTS

Structural shapes—angles, beams, channels, tees
Bars in rounds, half rounds, half ovals, squares and flats, etc.
Concrete reinforcement bars—plain and fabricated
Spring steel bars
Universal plates
Sash and special sections

MANUFACTURED PRODUCTS

Tie plates
Bolts, nuts, rivets, spikes
Cap screws
Track bolts and spikes
Pipe and tank bands
Threaded rods, plain or upset
Specialties

Fabricated Steel Construction Division

Peacetime activities—

Steel plate and structural work; construction of barges and dredges; steel plants, including furnaces; bridges for railroads, highways, and the handling of materials; public, office and industrial buildings; equipment for gas plants, chemical plants and oil refineries; pipe, diameters 20 in. and larger; storage tanks for oil, gasoline, and water.

Wartime activities—

Fabricating and erecting steelwork for war production plants, hangars, drydocks and other special war construction; building barges for the Armed Services; manufacturing ship parts and sub-assemblies, such as rudders, inner bottoms, diesel-engine frames, bulkheads and deck sections, ship hull plating.

**BETHLEHEM
STEEL**

BETHLEHEM STEEL COMPANY

GENERAL OFFICES: BETHLEHEM, PA.

Bethlehem Steel Export Corporation
New York City

BEAUTY DRAWS THE CROWDS!



Tomorrow's Cars will be Brighter with Interior of **VELON***

EVERYBODY knows the brightest cars will sell the most tickets in tomorrow's competition. But how can seating be made in bright, alluring, cheerful colors, and still be practical?

The answer is *Velon*, Firestone's new wonder fabric.

Any color is practical in *Velon* because a mere wipe of a damp cloth or cleaning fluid instantly restores its original beauty and freshness. It is stainless—resists grease, alkalis, acids—dirt cannot cling. *Velon* cannot fade, nor absorb water. It is non-inflammable, cannot snag, sag or stretch.

Seating installed over three years ago in subways, planes, railroads, and buses is still as new looking as ever, despite the abuse of wartime transportation. Users say it is virtually indestructible.

No need ever again to confine your cars to those

drab, conservative shades. Color—deeply vibrant or delicately pastel—and wonderful effects in pattern, weave, texture and style will be ready for you in *Velon*, after the war.

Make room for *Velon* now, in your plans. This magnificent material will not only be available for car interiors, but also as upholstery for terminals and waiting rooms to give your customers the bright promise of luxurious travel to come.

P.S. For completely modern seating, use *Foamex* cushioning, Firestone's rubber latex foam.

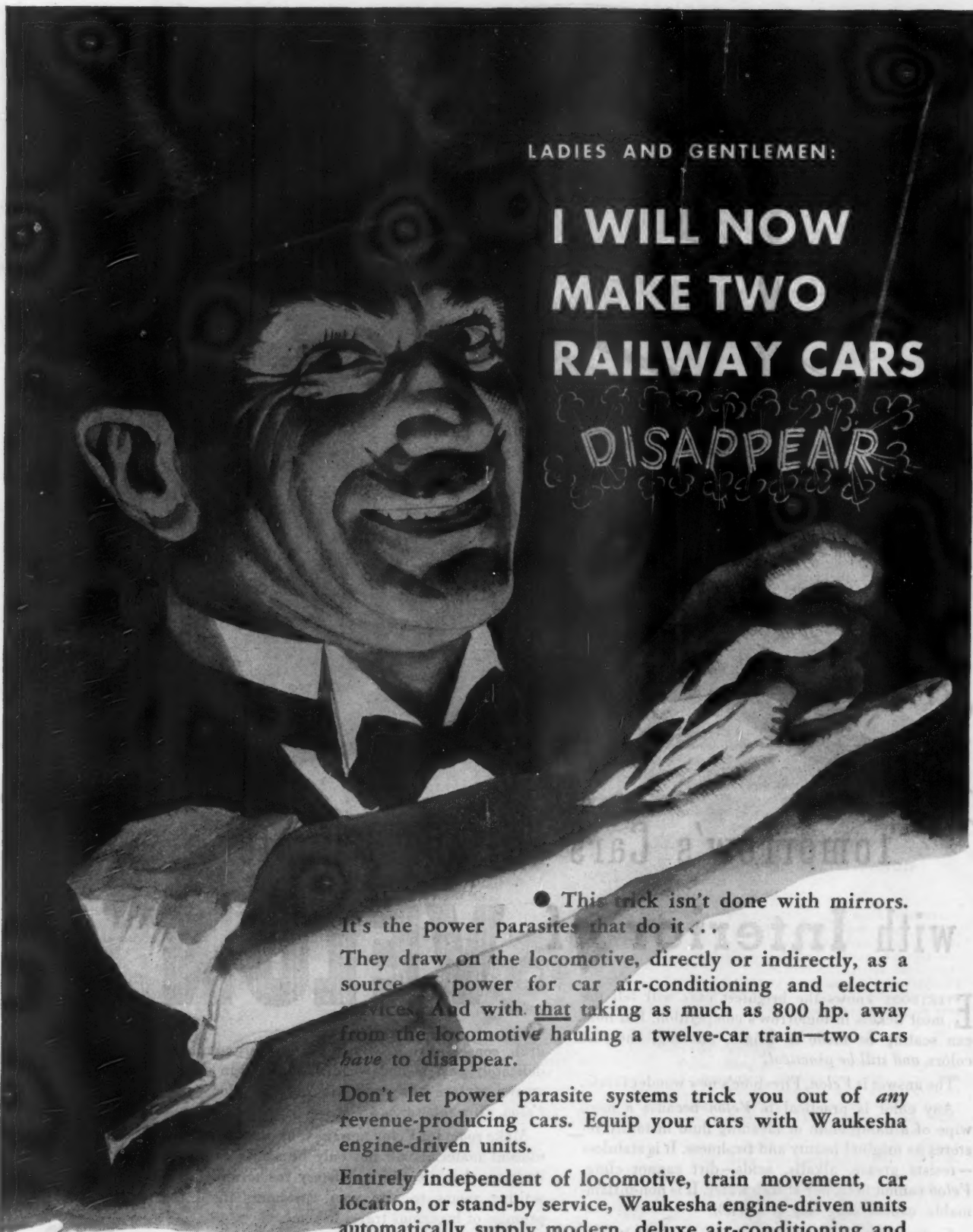


LISTEN TO THE VOICE OF FIRESTONE MONDAY EVENINGS OVER NBC

ANOTHER CONTRIBUTION TO A BETTER WAY OF LIFE by

Firestone

*Trademark pronounced VEL-LOH



LADIES AND GENTLEMEN:

**I WILL NOW
MAKE TWO
RAILWAY CARS
DISAPPEAR**

● This trick isn't done with mirrors.

It's the power parasites that do it...

They draw on the locomotive, directly or indirectly, as a source of power for car air-conditioning and electric services. And with that taking as much as 800 hp. away from the locomotive hauling a twelve-car train—two cars have to disappear.

Don't let power parasite systems trick you out of *any* revenue-producing cars. Equip your cars with Waukesha engine-driven units.

Entirely independent of locomotive, train movement, car location, or stand-by service, Waukesha engine-driven units automatically supply modern, deluxe air-conditioning and lighting on demand... Ask any user, or write to:

Refrigeration Division

WAUKESHA MOTOR COMPANY

WAUKESHA • WISCONSIN

Largest Builders of Mobile Engine-Driven Refrigeration and Generator Equipment

around the clock . . . around the world . . .

BUDA

SERVES...

The Railroad Industry

Railways the world over depend on BUDA products for uninterrupted service — night and day. Wherever there are rails you'll find BUDA busy at work — justifying the 64 years of planning that have made each model the proven favorite in its field. Write or wire today for factual, illustrated bulletins.

BUDA "Kliech-Klaw" Jack

BUDA Bumping Post

BUDA Tie Nipper

BUDA Track Drill

BUDA Rail Bender

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BUDA Track Limb

BUDA Wheel

BUDA Track Jack

BUDA Motor Car



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15401 Commercial Avenue
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BUDA Gas,
Gasoline and Diesel Engine

Something New in Rest for You

...AND YOUR CUSTOMERS

HEWITT RESTFOAM



WHEREVER YOU SIT . . . WHEREVER YOU SLEEP

Yes, Restfoam is a wonderful new development in the field of latex foam . . . promising great advantages in comfort for travel of the future.

WHEREVER YOU SIT: in your home . . . in your car or your office; in train or plane; in lobby or lounge . . . you may enjoy the marvelous comfort of soft, resilient cushions of Restfoam.

WHEREVER YOU SLEEP: at home or hotel; in modern train or sleeper plane; chances are you will sleep on Restfoam . . . with unmatched comfort.

Restfoam is COOL . . . ventilated by

millions of tiny interlaced air cells that breathe and circulate air freely.

Restfoam is FIRM . . . does not lose its shape nor pack down . . . yet it is soft, springy, and resilient.

Restfoam is LIGHT in weight.

Restfoam is odorless and vermin-proof. It may be washed, scrubbed, or sterilized.

For comforts to come, remember the name . . . "RESTFOAM—something new in rest for you . . . and your customers."

Hewitt Rubber Corporation, 240 Kensington Avenue, Buffalo 5, New York.

HEWITT RUBBER of Buffalo
QUALITY RUBBER PRODUCTS FOR INDUSTRY FOR 85 YEARS

MILL CASTINGS BY

PSF

for years a Standard of

STEEL MAKERS

There's hardly a blast furnace operating today that does not use PSF equipment. We're building a lot for export, too. Many of the items have advantages of design—all of them have the clean, sound structure and highly accurate machining that our modern facilities make possible. For value in steel castings, specify "PSF".

47 YEARS OF STEEL CASTING KNOWLEDGE



Pittsburgh

STEEL FOUNDRY CORPORATION

GLASSPORT, PA.

Sales Offices: NEW YORK • PHILADELPHIA • WASHINGTON AND CHICAGO

W & D 9489

May 5, 1945

TO COMPANY PRESIDENTS:-----



Here's Another
BIG CHANCE FOR YOU
to "Pass the Ammunition!"

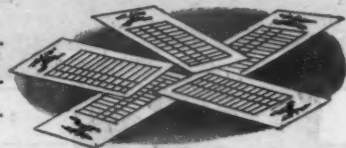
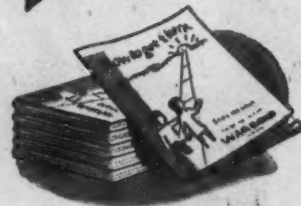
Today—thanks largely to you and other industrial executives—22,000,000 civilian workers are speeding victory and achieving postwar security through the Payroll Savings Plan. Over 60% of the 6th War Loan subscriptions came from this source—and, between drives, this forward-looking plan has been responsible for 3 out of 4 War Bond sales!

Good as this record is, the Payroll Savings Plan can be still more effective. Believing this can best be accomplished by giving Bond buyers a definite idea of the many benefits accruing to them, the War Finance Division has prepared a variety of active aids for employee education.

This new "ammunition" includes:

- a—An entertaining, swift-paced moving picture, graphically showing the importance of buying—and holding—War Bonds.
- b—An interesting, easy-to-read booklet, explaining how War Bonds may be accumulated to provide education for children, homes, retirement incomes, etc.
- c—Attractive, handy War Bond envelopes, enabling Bond holders to note each separate purchase—and the specific purpose for which each Bond or group of Bonds was bought.

Passing this particular ammunition requires that you reappraise your own company's Payroll Savings Plan. Have your own War Bond Chairman contact the local War Finance Committee—today! They will welcome the chance to discuss this new program with you.



The Treasury Department acknowledges with appreciation the publication of this message by

RAILWAY AGE

This is an official U. S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council





How electronics helps tell a knock from a boost...

THE MIT-Sperry Detonation Indicator is an engine instrument that discriminates between normal and abnormal combustion.

Through an electronic pickup, it *instantly detects detonation*—popularly called knocking or pinging—in most types of internal combustion engines. And it gives *immediate evaluation of detonation*.

As a result, warning is given at the time trouble *starts* . . . engine life is lengthened . . . mixture may be adjusted so that considerable fuel is saved . . . and the period between engine overhauls is extended.

No piercing of engine cylinders is required. Yet even the slightest detonation is signalled visually, and the faulty cylinder or cylinders spotted.

Use of the MIT-Sperry Detonation Indicator on airplanes results in remarkable fuel savings, longer engine life, greater safety.

The same is true of surface transportation which employs internal combustion engines.

Engine manufacturers find this instrument an invaluable aid in designing and testing. It also permits development of fuels exactly fitted to engine characteristics, thus increas-

ing power output and lowering fuel costs. Also with the Knockometer, a special application of the Detonation Indicator, fuels with superior anti-knock characteristics can be developed and their quality production controlled.

Since 1937, Sperry engineers have been working on the perfection of a detonation indicator. This is but one of the many fields in which Sperry has pioneered in the field of electronic development.

Additional information on the MIT-Sperry Detonation Indicator is available on request.

SPERRY GYROSCOPE COMPANY, INC. GREAT NECK, N. Y.



Division of the Sperry Corporation

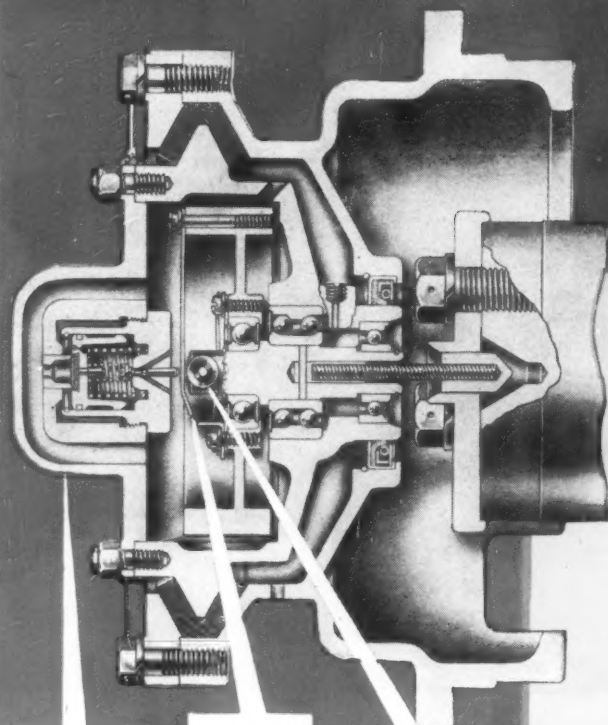
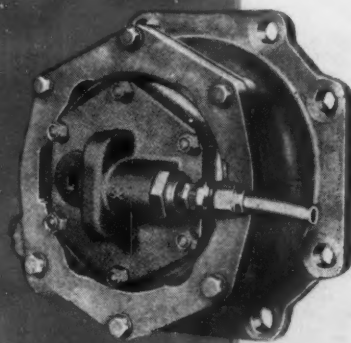
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LOS ANGELES • SAN FRANCISCO • SEATTLE • NEW ORLEANS
CLEVELAND • BROOKLYN • HONOLULU

GYROSCOPICS • ELECTRONICS • RADAR • AUTOMATIC COMPUTATION • SERVO-MECHANISMS

A Look through the *Middle* of the

“AP”

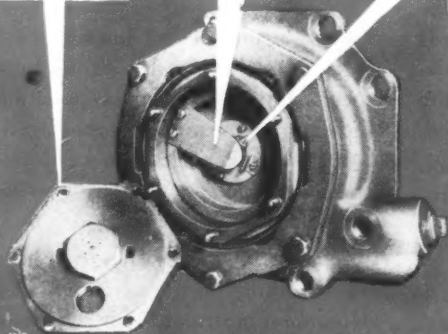
Decelostat



Housing
Cover

Spring
Cam

Rollers



SOFTENS THE BRAKE
WHEN WHEEL SLIP IMPENDS

THE “AP” Decelostat truly rolls with the wheel and registers change in wheel retardation when brakes are applied. If the wheel slips, the high rate of retardation motivates the Decelostat to moderate the braking force and forestall slide.

Sensitivity is obtained with mechanical simplicity. The Decelostat shaft rolls on ball bearings, front and rear; its actuating medium is a simple spring cam. Mechanical design requires few parts—assures the operating reliability that instantly identifies wheel slip and *softens* the brake.

Westinghouse Air Brake Company

Wilmerding, Pa.

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Decelostat

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and registers
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anical design re-
ssures the opera-
stantly identifies
tens the brake.

Company

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette, and the Railway Age-Gazette. Name registered in U. S. Patent Office.

Vol. 118

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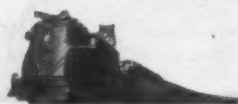
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"UNION" CODED TRACK CIRCUIT CONTROL

RECORD OF



PROGRESS

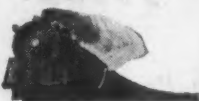


1933 First installation of three- and four-indication wayside and cab signaling in electrified territory.



1934 First installation of three- and four-indication wayside and cab signaling in steam territory using storage battery track circuits.

First installation in multiple track territory with reverse running on one track.



1938 First 11,000-ft. track circuits using primary or storage batteries.

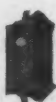
First application of coded reverse circuit for approach lighting of wayside signals and approach application of cab signal energy.



1939 First installation of three-indication wayside signaling only in steam territory employing the 11,000-ft. track circuits.

First application of tuned alternator as a standby for supply of cab signal energy.

First application as "detector" track circuits in interlockings.



1940 First installation of cab signaling without wayside automatic signals in steam territory.

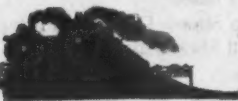
First application of approach-energized tuned alternators as the sole source of cab signal energy.

First installation in single-track territory with Centralized Traffic Control.



First installation of A.P.B. with three- and four-indication signaling.

First installation using coded detector track circuits and line wire signal controls.



1942 First installation of four- and five-indication signaling in electrified territory.

1943 First installation with three-indication signaling for either direction operation using polar reverse codes.



Normally De-energized

(CODED TRACK CIRCUIT CONTROL for C. T. C. territory*)

After extended testing in regular railroad service, The Union Switch & Signal Company announces a new addition to its long list of achievements in track circuit systems—*Normally De-energized Coded Track Circuit Control*. Track circuits between sidings and local circuits at intermediate signals are energized only when the operator of the C.T.C. machine sets up a route which includes these areas.

*The first installation was made on the Milwaukee and is described in the April issue of *Railway Signaling*.

Major advantages of this new development are:

1. Reduces power requirements to a minimum depending primarily on the density of traffic. One road estimates that with 15 trains daily, circuits are energized each way for only *two hours* in each twenty-four.
2. Lends itself to highly efficient operation with primary batteries. Power wires between sidings in C.T.C. territory are unnecessary.

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The Week at a Glance

MASS. FACES THE FACTS: Massachusetts has become the first state with sufficient honest realism to recognize that the railroads are no longer in a position to indulge in the charitable occupation of carrying commutation passengers at less than cost, while the outlook for the business becomes constantly more hopeless as traffic is spirited away by toll-free super-highways. Under the Massachusetts proposal, the state would organize a rapid transit "authority" to take over existing transit lines and operate an electrified short-haul service on the railroads, the suburban trains to be diverted from railroad terminals in the heart of the city and, instead, be routed through existing rapid transit tunnels. By unification and getting rid of taxes (through state ownership) the Massachusetts commission reckons that transit service can be made profitable, and turned from a declining into a growing business. Facilities to care for the traffic can be provided by transit lines at one-fifth the cost of highways to accommodate comparable traffic, and the transit lines won't cost the taxpayer anything, nor involve a parking problem. This interesting and foresighted proposal, is reviewed in a short article in this issue.

FREIGHT CAR TRUCK TESTS: Detailed requirements for performance testing of freight car trucks are given in a paper in this issue by Chief Engineer Cottrell of American Steel Foundries. Directions for removing confusing variables from the tests are offered, along with practical suggestions for dependable observation. Tests conducted by the A. A. R. in 1939 and subsequent study have led the author to several specific conclusions of characteristics desirable in a high-speed freight car truck, and he reveals them.

HUGE SAVINGS IN GROUTING: "Water pockets" in roadbed, which necessitate constant maintenance attention to the track above them, and frequently require slow orders against trains for extended periods, are being overcome on the New York Central, Lines West, by cement grout applied pneumatically to keep water out of the unstable sub-soil. An illustrated article herein describes the method employed, and the article and an editorial reveal the ratio of savings to expenditure. A return of something like 150 per cent or more upon the investment seems to be a reasonable expectation from such work.

HOBBS BILL NEEDED: The railroads know from experience that they cannot afford again to increase their ratios of bonds to stock—but look at the present market! With sound bonds in unprecedented demand at interest rates only a little higher than those of government securities, railroad stocks are selling in what is considered to be a bull market at prices at the mid-depression 1936-37 level. The only kind of "railroad credit" which has any effective meaning to the country's need for modern transportation service is that which will enable and encourage the carriers to raise new capital for improvements. Of

this kind of credit, it cannot be said, generally speaking, that the railroads have any—because they dare not enlarge their fixed-interest obligations and they can't sell stocks. One of the obvious causes for the disfavor under which stocks are laboring is the complete "liquidation" (in the Nazi or Russian sense) to which the I. C. C. has subjected them in reorganizations, despite clear proof that they represent large earning power. An editorial concludes that passage of the Hobbs bill to prevent the I. C. C. from continued operation of a Buchenwald cadaver plant for equities is necessary for the revival of railroad credit in the most socially-important meaning of the term.

2ND CLASS CITIZENS: By what reasoning can pensions and unemployment and sickness insurance (the latter entirely at the employer's expense), on an especially liberal basis, be justified for railroad employees, while all other Americans are placed in an inferior category, to receive much more modest benefits? The leading editorial in this issue says that some measure of the special favors in pensions accorded to railroad employees under existing law can probably be justified because, individual railroads having been largely relieved of their private pension obligations, they agreed by collective bargaining to existing generous annuity arrangements. Most of the unions (there are honorable exceptions), however, have now repudiated collective bargaining on the question and are seeking much larger benefits to widen still further the gap between their position and that of Americans of inferior rank. The difficulty lies in the fact that competing agencies of transportation are taxed to support only the relatively modest outlays under the general social security law—a further handicap to the railroads in meeting competition. If railroad employees are to be still more expensively favored, railroad traffic and jobs will suffer proportionately. As usual, the little fellow at the bottom of the seniority list will take it on the chin.

FAMINE IN TIES: Inadequately seasoned ties, treated in advance of proper maturity, are being robbed from stocks which ought to stand till 1946—that's how bad the shortage of crossties is. A survey among leading tie producers in the area east of the Rockies indicates that production in the first two months of the current year was down from 40 to 50 per cent under last year. It is reported herein that this famine arises from "ceiling" prices which are too low to bring the timber out of the woods, or to insure that what does come out is put into the shape of ties rather than other kinds of lumber where minimum prices are high enough to yield a larger return. Historians who record the story of the current war will fail in their task if they do not note how, domestic transportation having come so easily to the war planners, they developed a conviction that all the service they could use would continue to be proffered, without their taking thought of even the elementary means to that end.

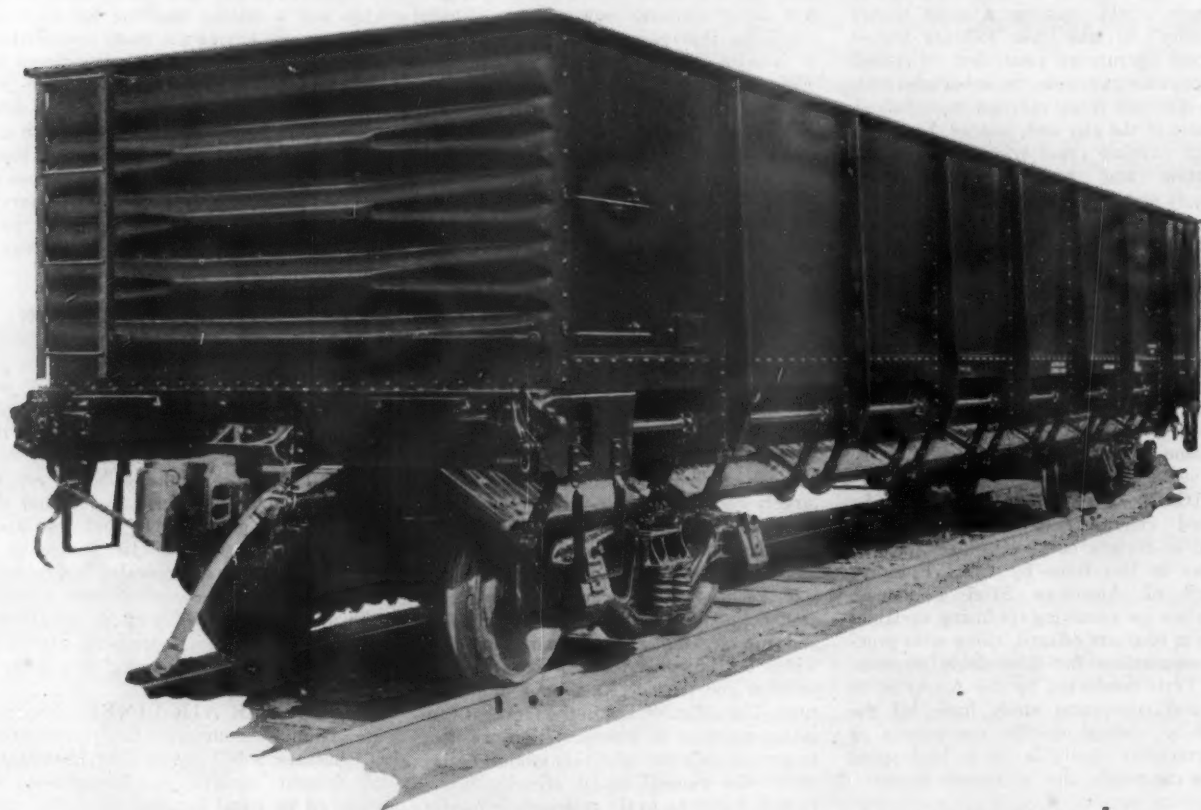
TESTING ON THE N. & W.: Scientific examination of materials and supplies as it is practiced on the Norfolk & Western to assure acceptability of products for the employment to be given them—is the subject of an illustrated article in this issue. The road's process of inquiry does not, moreover, stop merely with testing but gets over also into development. An effective protective coating for the interior of freight cars and a testing machine for flashlight batteries are among the many contributions this application of scientific techniques has made to more efficient railroading. The laboratory staff is set to work on all kinds of "trouble-shooting" assignments and corrective measures issue from such study, almost without exception. An enormous reduction in hot boxes, better water service and improved performance of steel parts are among the further accomplishments of this comprehensive endeavor.

CLERIC RAPS TRAVEL BAN: A Congressman has introduced a bill to exempt religious organizations from the ban against conventions of more than 50 persons where travel is required. It appears that a holy man sought to secure this preferential treatment for his flock by a personal appeal to the director of the O. D. T., but was unsuccessful, and this objective is now sought by legislation. What answers Colonel Johnson gave to this argument are not revealed, but he could have cited plenty of authoritative evidence indicating that proficiency in moral and spiritual exercises is more often associated with solitude than with agglomeration.

GRAVY FOR AIR LINES: The Senate commerce committee has recommended for passage a bill authorizing \$500,000,000 of federal outlays on airports—to be matched by equal largesse from the states—a subsidy of \$1 billion in all. When hearings were held by the committee, Chairman Bailey made some pointed observations to the effect that such federal expenditures should be made contingent upon users' fees to reimburse them, but this legislation calls for an outright donation from the taxpayers, who are all so rich and prosperous that they won't notice tossing away a few more billions to hardy and self-reliant "private enterprise," about which so much more is heard than is seen.

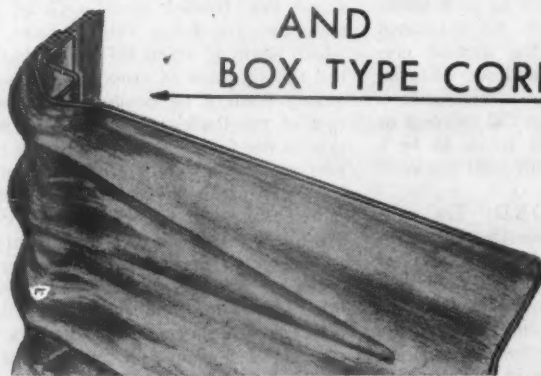
WHAT THEY SAY ABOUT DIXIE: The Committee on "Fair Employment Practice" was scheduled to begin hearings at Houston, Tex., on May 4 on complaints against the Texas & New Orleans and the Brotherhood of Railroad Trainmen, which allege that colored folks are being denied opportunities for jobs as switchmen "solely because of race or color," and that the union has an agreement with the company calling for such discrimination. In New York and several other northern states inquisitiveness by a prospective employer into the racial origins of an applicant for a job is a punishable misdemeanor, but such anachronistic curiosity is still tolerated on the part of persons contemplating matrimony.

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RAILWAY AGE

Why Special "Social Security" for R. R. Employees?

Under the federal "social security" law, an employee who works 30 years at an average monthly wage of \$200 is eligible at age 65 to a pension of \$42.50 per month, if single, and to \$63.75, if married and his wife is also 65 years old. Under the Railroad Retirement Act, a railroad employee with the same wages, same age and same length of service would draw a monthly pension of \$90, or more than twice the payment to the single non-railroad annuitant. An important further distinction between ordinary "social security" benefits and those provided for railroad employees is that railroad employees coming to the age of retirement are eligible for pensions to the full amount based on their total years of service, whereas, under ordinary "social security," the size of the annuitant's pension is determined not by the number of years he has worked but by the number of years he has paid taxes into the federal pension fund.

There are other differences between old-age pensions as applied to railroad employees and those available to employees of other industry, but in almost all instances the railroad employee is favored by the comparison; and, to make sure that there are no exceptions to this general rule, a clause in the Railroad Retirement Act provides that no beneficiary under it shall receive less than he would receive if he came under the general "social security" law. For these larger benefits, the law as it now stands will subject the railroad employee to a tax on his wages at an ultimate limit of $3\frac{3}{4}$ per cent, while, for the smaller pensions under the general "social security" law, the ultimate tax rate on the employee is to be 3 per cent.

What the Unions Ask

Despite these special advantages which railroad employees are already enjoying under existing legislation, most of their union leaders are not satisfied and, with the assistance of Murray Latimer, chairman of the Railroad Retirement Board, are sponsoring legislation in Congress to provide numerous additional benefits to railroad employees, as a favored class in the community. Among the proposed changes are the following:

Annuities for a railroad pensioner's survivors, somewhat similar to those provided under the general "social security" law, but 25 per cent larger.

Increases in all pensions in the "lower brackets" and for shorter periods of service. (For example, an employee whose wages averaged \$50 per month up to 19 years' service would draw the same pension as an employee whose wages had been \$175 per month, but the latter would in this period pay $3\frac{3}{4}$ times the sum in taxes than the lower-rated employee would pay.)

Liberalization of the conditions under which pensions are paid for disability, before reaching the retirement age.

Unemployment insurance for employees of other industries is a state enterprise, but for railroad employees there is a special federal law providing compensation

during periods of unemployment. Under both the state systems and the federal provisions for railroad employees, the cost is borne entirely by a payroll tax (usually 3 per cent) on employers. Some of the state systems provide for a reduction in this tax on employers where experience has shown that the benefits can be paid from lower charges, but no reduction has been made in the tax levied on the railroads although the enormous reserve of \$540 million has been accumulated. Instead of reducing the tax on the railroads, or suspending it altogether until the reserve fund shows need for replenishing, the predominant leadership of the unions is proposing to disburse this reserve (and then some, probably) by greatly expanded unemployment benefits.

Unions Oppose Collective Bargaining

For example, the proposal is that the maximum daily payment on account of unemployment be increased from the present \$4 to \$5 and that the number of days that this payment may be collected be increased from 100 to 130. Furthermore, it is proposed to make these payments, not just to employees ready to work for whom no jobs are available, but to those who are prevented from working—not by any act of the employer—but because of illness. That is, it is proposed that insurance against unemployment be expanded, entirely at the employers' expense, to include insurance against all hazards to health.

Some justification may be found for the railroad retirement law in its present form—despite its greater generosity than the general "social security" law—because it was the result of collective bargaining between railroad unions and railroad managements. Without managements' acquiescence at the time, the Railroad Retirement Act would probably have been declared unconstitutional by the Supreme Court, which so ruled on the predecessor to the present law. However, the act has stood unchallenged since 1937, and, since that time, the personnel of the Court has been considerably altered. Most of the unions, which once held "collective bargaining" in such apparent esteem, have now turned their backs on the process and are seeking their objectives by unilateral political action. Speaking for the unions which are supporting the proposed legislation—designed to make railroad employees a still more privileged class in "social security" benefits—D. B. Robertson recently indicated that the collective bargaining process was too slow to be henceforth acceptable to him.

The differences between "social security" for the bulk of Americans, and that already provided, and now proposed to be greatly enlarged, for railroad employees as a specially favored class, are discussed at length in a pamphlet by R. B. Robbins, vice-president, Teachers

Insurance and Annuity Association,* who raises the question of the social justification for setting apart one group of citizens for such special treatment. From the standpoint of the railroads, they are faced with the possibility under proposed legislation of having to meet payroll levies of 9¼ per cent to provide "social security" for their employees, whereas other industry, including rival agencies of transportation, will pay an ultimate tax of only 6 per cent. This disparity will simply add one more inequity to the many already borne by the railways in meeting the rivalry of tax-assisted competition. The shipper who depends on railroad service will have to pay rates high enough to sustain these special favors to railroad employees in which he and his employees do not participate.

If railroad employees could secure these special advantages without loss of job-opportunities, possibly these proposed additional benefits would be to their advantage. All the evidence points, however, to a difficult competitive struggle by the railroads in the post-war period, and anything which will add, as would proposed liberalization of "social security" for employees, to the handicaps from which the railroads already suffer will penalize railroad employees in jobs as much as it will the railroads in traffic. Moreover, before demanding greater disbursements, the unions would be well advised to look into the solvency of the existing pension fund, of which competent opinion has raised serious question. A healthy bird in hand is still worth a couple, however gaudy, in the bush. Generous "social security" for railroad employees will not create very widespread satisfaction if the number of people permitted to enjoy such liberality is reduced to a mere handful.

*"Railroad Social Insurance," published by the American Enterprise Association, 4 E. 41st St., New York 17, price 50 cents.

A Sky Full of Planes?

The airplane industry has its elements of romance—and also of romancing. Beautiful pictures have been painted of the sky of the future so full of planes that flying traffic cops will be necessary. Estimates in astronomical figures have been broadcast which foretell a stratosphere full of super-transport. The facts, as developed by certain of the more studious and practical men of the airplane industry, give meager support to these fanciful imaginings.

G. M. Williams, senior vice-president, Curtiss-Wright Corporation, has recently said: "Despite the important role of air transport, we cannot count on commercial aviation to be able soon to absorb the output of more than a small fraction of the country's present aircraft production capacity. Just prior to the war the air lines were operating about 340 transport planes. Naturally, their needs after the war, with expanded routes, better equipment and increased travel, will be much greater, but with new transport types carrying double the load of present airliners it is unlikely that domestic commercial aviation will require more than 1,000 planes by 1950. That is a long way from the usual 'blue sky' expectation of tens or hundreds of thousands of planes blackening the sky."

After pointing out that modern navigational instru-

ments will enable planes to fly in nearly all kinds of weather and largely eliminate the disruption of schedule caused by the fact that only about 92 per cent of peace-time commercial flights could be started or completed, Mr. Williams discussed the size of future planes.

"Put it down in your little black book right now," he said, "that by far the majority of post-war air travel, at least for several years, will be in planes little larger than those now in regular air line service. There is no place in the foreseeable future for vast fleets of super-super-transport making frequent domestic stops, carrying upward of 200 passengers. There will be a demand for 10 to 15-passenger planes for feeder service; a plane about the size of the present largest air liner for trunk line operation; a 36 to 60-passenger plane which will carry the bulk of the air line business; and a very small number of very large transports capable of carrying 100 or more passengers in trans-oceanic or trans-continental flights.

"The tremendously large transport plane is ruled out of ordinary domestic operation, for the present at least, because of cost factors. It is far more economic to have a number of 40-passenger planes on frequent schedules, operating near capacity, absorbing overload from other flights, than to have extra-large equipment flying far short of capacity on some schedules in order to maintain regular service."

Mr. Williams spoke at the Chicago Forum of Aviation on April 10 and was one of a number of speakers who deflated some of the extravagant claims that have been made. An analysis of his figures indicates that, on a liberal estimate, the average seating capacity of the post-war planes will be about 37 passengers, or materially less than the average railway passenger car capacity. His figure of a maximum of 1,000 planes in commercial service taken in conjunction with the average capacity figure should not produce too violent alarm among railway passenger traffic officers.

Of course, what the distant future may bring forth in the way of air liners is anybody's guess, and this, with the fact that a single plane can pile up a lot more passenger-miles in a day than can the railway passenger car, should prevent complacency among railway officers. Also, it should be remembered that the bulk of these planes will be concentrated on the most profitable runs. Even so, the railways have excellent means of helping them meet competition in the form of increased comfort, centrally located terminals and economical rates.

Tie Production Slump Demands Prompt Action

In an address before the Maintenance of Way Club of Chicago a few days ago, and abstracted elsewhere in this issue, A. C. Mann, vice-president, purchases and stores, Illinois Central, pointed to the falling production of crossties, and insufficient supplies of rail, track fastenings and other materials as the forerunner of critical track conditions within the near future.

The downward trend in crossties production which began last August now has assumed alarming magnitude. The total production of 13 tie companies that

ordinarily produce approximately 55 per cent of the crossties manufactured east of the Rocky Mountains, declined during the months of January and February 42 per cent compared with the production during the same period last year. That this figure is conservative is evident from results obtained by a broader survey, conducted among practically all of the tie producers in the same area, which reflects a reduction of 47 per cent during the same period.

Although several reasons may be ascribed for the shortage of crossties, the fundamental reason remains the same, inadequate ceiling prices and discriminatory regulations which favor the production of lumber by hundreds of small mills throughout the country that ordinarily devote practically all of their efforts to the production of crossties. Scarcity of labor in the woods and at the mills stems from the same reason and little or no help can be expected from the United States Employment Service, principally because so many better jobs are available at higher wages.

While it is anticipated that sufficient crossties will be made available generally to meet 1945 renewal programs, in many instances these ties were not accumulated, as Mr. Mann has intimated, from the 1944 production. For instance, one of the largest railroads in the country was forced even during 1944 to resort to the treatment of unseasoned ties by the Bolton process because tie production fell so sharply that it was impossible to follow its standard procedure of air seasoning prior to treatment. With steadily falling production it has been necessary to continue this procedure notwithstanding the fact that serious doubts are entertained with regard to the prospective life of the treated ties and the fact that such artificial seasoning greatly prolongs the time that the charges must be retained in the treating cylinders, requires more fuel and imposes

greater difficulties and a greater load upon treating plant facilities.

Many of the railways in 1944 were forced to dip into stocks that had been produced for 1945 treatment and insertion. So the cycle continues this year, with the result that many railways again are forced to dip into 1945 production, normally intended for 1946 or 1947 use, and treat by various means if they are to supply the demand for crossties in 1945. Every week and every month of delay in facing the situation and applying remedial measures, which to a large extent would be met by an adequate upward revision of ceiling prices, prolongs this vicious cycle and imposes ever-growing responsibilities upon railway procurement and maintenance officers, responsibilities of no small proportions if the Japanese war is to be prolonged as many of our military authorities assert, and the tremendous demands of rail transportation are continued in conjunction with redeploying our forces and redirecting war materiel to the Pacific theatre.

The Hobbs Bill Should Be Enacted

This paper does not oppose "drastic" reorganizations of bankrupt railroads—in the sense that, when a railroad is unable to meet interest charges or maturing obligations, the resulting correction undertaken in its capital structure goes just as far as past experience indicates is necessary to curtail fixed charges and to make provision for the unembarrassed satisfaction of future maturities. A reorganization which does not reduce fixed-interest indebtedness within the limits of the capacity of a railroad to carry the burden under

the most adverse conditions which past experience indicates may again recur is only a palliative and not a cure. Moreover, stockholders who have failed to discharge their indebtedness are not entitled to participate in a reorganization without assessment and with their original equity unaltered.

There are two simple principles upon which all willingness to invest in industrial enterprises is based and these are (1) security of principal or of ownership and (2) a reasonable prospect of a return in the form of interest or dividends. Arbitrarily taking the property of A and bestowing it upon B is an infallible means of teaching A never again to put his savings where, experience has taught, such treatment may be repeated.

A Friend Stops to Ask His Way



It is for this reason that, when a mortgage obligation is defaulted and its owners are compelled in a reorganization to accept contingent interest securities in exchange, it is unjust that equity-holders should retain to the same degree as formerly an unassessed participation in the ownership of the property. The loss, that is, from the bankruptcy of the property should fall upon the equity-holders and not upon those who lent their money.

But, while it is unjust and destructive of the willingness of lenders to put their savings in railroads if they have to accept inferior claims on property and earnings while owners of the company escape unscathed from their failure to pay their debts, it is obviously equally destructive of the willingness of investors to put their savings in equity securities if their property is to be arbitrarily taken from them and bestowed upon others.

The kind of reorganizations of bankrupt railroads which the Interstate Commerce Commission is insisting upon, and in which it has been sustained by the Supreme Court, accord precisely this last-mentioned treatment to the equity-holders. That is, going beyond the reasonable satisfaction of the claims of creditors, the Commission has proceeded to oust the equity-owners from their ownership entirely, on an assumption that their residuary interest is valueless. Experience utterly belies this assumption. As the report of the House judiciary committee on H.R. 37 (the Hobbs bill to amend Sec. 77 of the bankruptcy act) says:

"In 1942 the Missouri Pacific earned \$32.67 a share on the common stock outstanding under the old capitalization; the Denver & Rio Grande Western \$34.40 a share; Rock Island \$25.11; Frisco \$18.03; St. Louis Southwestern \$27.23. These figures were approximately repeated in 1943, and high earnings [continued] in 1944."

In other words, the economic usefulness of the property of old stockholders of these companies has been concretely demonstrated—yet the Commission says that ownership claims upon this property are so worthless that without injustice they may be taken away from their holders and bestowed upon company creditors, or perhaps upon the users of transportation service.

No owner of property can reasonably object to penalties upon his equity sufficient to the reasonable satisfaction of indebtedness, but he is not going to be very enthusiastic hereafter about investments of a type where a temporary reduction in earnings is used as an excuse to deprive him of his ownership entirely, even after indebtedness is adequately repaid.

There are, perhaps, some other reasons why sound railroad mortgage obligations have attained prices almost without precedent while stock prices still linger in a so-called bull market at a level no higher than that of 1936-37, but the comparative treatment which has been accorded to the two classes of securities is certainly outstanding among these reasons.

The restoration of railroads' ability to finance their needs for improvements requires a restoration of the market for railroad equities, and the Hobbs bill does not go any further than to require that owners of these securities be not expropriated on grounds no more equitable than an obviously erroneous guess that the property they reflect has lost its economic value. The Hobbs bill, therefore, or a reasonable likeness thereof,

must be enacted if normal private investment sources are again to be open to the railroads, in the economically healthy form of equity securities. No hope for this result can be entertained so long as the opportunity and likelihood of arbitrary expropriation of such investments continue to be the law of the land.

Big Dividends

Railway managements seriously interested in improved track and large returns on investment will find helpful information in the article in this issue entitled "Roadbed Grouting Pays Big Dividends," even though the technical phases of the work described are outside the immediate field of their thought and endeavor. It is because it is so important that railway managements appreciate the large economic possibilities in roadbed stabilization, that the phrase "Pays Big Dividends" was used deliberately in the heading on the article, rather than words which would describe the methods discussed.

Whoever reads this article looking for means of effecting large returns on expenditures will not be disappointed if he is satisfied with yields which range as high as 300 per cent on the outlay annually, accompanied by other advantages in improved train operation, which may well in some instances be even more attractive than the monetary return. To be specific, the New York Central System, whose work is described, estimates that through the 36,379 track-feet of grouting it has carried out during the past four years, at a cost of about \$54,750, it is effecting savings in track labor alone amounting to \$85,880 a year, or an average annual return of more than 150 per cent.

Can railroads afford to expend the necessary labor on this class of work in view of the present labor shortage? The figures available from New York Central records indicate that the man-hour savings resulting are so large that the roads can scarcely afford *not* to carry out work of this kind, at least where the possibilities in savings are the largest.

Converting the monetary savings in this work into labor saved, employing average hourly rates of pay, the New York Central is currently avoiding approximately 150,000 man-hours of unnecessary track maintenance annually, equivalent to the work of 50 men employed 300 ten-hour days a year. Combined with the removal of slow orders, which has been the rule where the roadbed stabilization has been carried out, these results are so arresting as to command the attention of every road with stretches of soft track requiring an inordinate amount of routine maintenance—and what road does not have its share of such track?

Whether the method of correction is to be grouting, as being employed by the New York Central and described in the article referred to, or pipe subdrainage, deep ditching, or pole driving, which, under many conditions have brought about results equally as striking, is a matter for engineering and maintenance officers to decide. The point is that all of these methods, where appropriate and properly applied, promise such remarkable results that economy, the conservation of labor, and improved train operation, demand that they be given thoughtful consideration.

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Roadbed Grouting Pays Big Dividends

Experience on the New York Central System shows large savings in maintenance costs, improved track conditions, and complete elimination of slow orders

AS one of the first railroads of the country to undertake track stabilization by injecting cement grout into the roadbed, the New York Central System is reaping large economies in track maintenance in the areas affected, and, at the same time, has overcome rough riding conditions and former chronic train delays at these points due to necessary speed restrictions or slow orders. To January 1, 1945, 197 soft spots on the system had been treated by grouting, involving a total of 36,379 lin. ft. of track, and, in every instance, carefully kept records show sharp reductions in maintenance costs, which have usually been more than enough to offset the cost of the grouting in a few months' time. For example, records of the 31 soft spots treated during 1942 show that, whereas the total cost of the grouting done in that year was approximately \$4,300, the total savings in maintenance for the 12 months following completion of the work amounted to more than \$13,000.

All of the grouting on the Central to date has been done on the Lines West of Buffalo, and the future grouting program of these lines, as now contemplated, calls for the correction of conditions at approximately 1,200 additional soft spots of varying length in main track, with the probability that it will also include an equal number of projects on branch lines. Furthermore, having found its grouting practice highly effective in stabilizing roadbed conditions in the approaches to bridges, preventing settlement of the track at these points, the Lines West of Buffalo plan considerably more of this type of work in the future, on both main and branch lines.

Sixteen outfits will be employed in the roadbed grouting to be carried out in 1945.

All of the grouting on the Lines West of Buffalo is being done by small crews of company forces, employing a relatively rich cement-sand grout, in all cases placed by the pneumatic method. The fundamental principle involved in the work is to seal off water-holding depressions in the roadbed, preventing moisture from reaching the unstable sub-soil, and, through the concrete formations built up in the roadbed, help distribute the load of traffic over the softened depressions.

Causes Studied

The soft spots in track on the New York Central, commonly called water pockets, are little if any different from those found in the tracks of all railroads, and occur in all types of roadbed sections, including deep cuts and high fills. These vary in depth with the character and water content of the sub-soil, and with the amount of ballast that has been driven down into the sub-soil under the weight of traffic. They likewise vary in length from a relatively few yards to several hundred feet.

Confronted with many soft spots of this character, and dissatisfied with the results of earlier attempts to stabilize them, the New York Central, in 1940, began an investigation designed to develop a permanent cure for the objectionable conditions. In this investigation, it made sub-soil explorations of typical soft spots to determine the actual conditions prevailing and to be remedied.



A Two-Crew Equipment Set-Up, Ready to Start Grouting. Air Compressors Are Not Shown in This Photograph

Six spots on the Toledo-Detroit branch, near Monroe, Mich., were selected for this investigation, and within the limits of each spot a series of test trenches, with the individual trenches 25 ft. apart, were dug across the roadbed and were carried down to sound, dry subgrade material. All of the test cross sections were made after a six weeks' period of drought, during which time frequent periodic maintenance of the track had been required to keep it in good surface.

Observation of these test sections showed that, in most cases, the ballast had been driven deeply into the sub-soil, and that the sub-soil itself, directly beneath the pockets, was so wet and plastic that it oozed out between the fingers when compressed in the hand. Observations also showed that the lowest point to which the ballast has been driven into the subgrade under the pounding of trains was invariably directly beneath the rail or just outside of its projected vertical center line. Additional cross sections taken at a later date showed that the low points in the ballast pockets, beginning directly beneath the rail, may extend out as much as three feet beyond the ends of the ties. Where this extreme condition was observed, large bulges had occurred in the embankment face, which, in turn, indicated



High-Speed Train Operation Requires a Track Structure Free from Soft Spots



Injection Pipes in Place, Ready to Receive Grout

invariably that the pockets had reached an advanced stage of development.

On the basis of these observations, the New York Central began its pressure grouting of soft spots, the first work of this character being done in December, 1940, and involving the six sections of soft track near Monroe, previously investigated. Subsequent track grouting has included the following: 1,647 lin. ft. at 13 locations in 1941; 4,907 lin. ft. at 31 locations in 1942; 11,882 lin. ft. at 69 locations in 1943; and 17,943 lin. ft. at 84 locations in 1944.

Throughout this work of the last four years, the general principles of the grouting procedure employed have not changed appreciably, although a number of improvements have been incorporated in the equipment used, and still other improvements are contemplated just as soon as war conditions will permit.

Normally, the grouting crew employed consists of four to six men and a foreman, but, if long stretches of soft track are involved, or the amount of grout to be applied is unusually large, two or more crews, each with its own equipment, are worked together. This latter arrangement speeds up the work and permits the shifting of the men from one crew to the other as may be desirable in the interest of increased efficiency and greater over-all production.

The grout used in the work is a 1:1

mix, with enough water added to give it a soupy consistency. The sand is ordinary engine sand, screened through a No. 4 ($\frac{1}{4}$ -in.) screen. This mix produces a solid mass of considerable strength, ranging up to 2,500 lb. per sq. in.

Equipment and Procedure

The equipment employed by a typical grouting crew includes essentially an air compressor, preferably of the off-track type, with a rated capacity of 60 cu. ft. of air per min. at a pressure of 100 lb. per sq. in.; a combined grout mixing and pressure tank, driven by an air motor, for preparing the grout and for forcing it into the roadbed; a considerable number of $1\frac{1}{2}$ -in., double-strength iron injection pipes, ranging in length from 3 ft. to 5 ft., for placing the grout directly within the roadbed at the depths desired; one or two jackhammers, depending upon the size of the gang, for driving the injection pipes; a ratchet-acting device for pulling the injection pipes; and considerable auxiliary equipment, including sand box, water barrels, water tank and suitable lengths of grout delivery hose.

When undertaking a grouting job the equipment and materials are moved up to the site of the work and are unloaded along the roadbed shoulder, with the compressor, grout mixer, water barrels and sand box in an arrangement most convenient for operations. Immediately, enough injection pipes are driven along the track affected to permit continuous grouting the remainder of the day. This may involve from as few as three or four pipes where a large number of batches of grout are required at each point, to as many as 15 or 20 pipes where only a few batches are required.

Normally, the pipes are spaced 5 ft. apart longitudinally along one side of the track. All pipes are started into the ballast approximately one foot beyond the ends of the ties, and, where soft spots of normal depth are encountered, the pipes are slanted toward the track at an angle of approximately 30 deg. with the vertical. This location and sloping of the pipes brings their lower ends, when driving is stopped, to points beneath and slightly outside the rails. Where deeper soft spots or pockets are encountered, the driving angle of the pipes is reduced proportionately to within 15 deg. from the vertical, so that the lower ends of the pipes will in no case pass a point directly below the rail.

The depth to which the injection pipes are driven is determined by the resist-

ance to the driving. When a pipe breaks through the solidified top ballast and enters a soft spot, there is an immediate decrease in resistance to the driving. Driving is then stopped and, using a ramrod, the plug previously placed in the end of the pipe is driven out into the soft sub-soil. Water is then forced into the sub-ballast under a pressure of 40 lb. per sq. in. to flush fine clay and silt particles away from the pipe and to produce a lubricating effect in the pocket for the free entry of the grout.

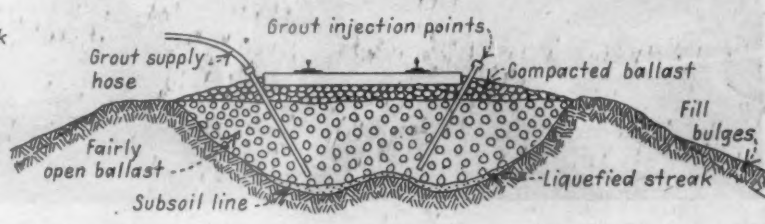
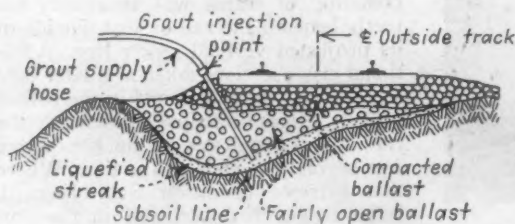
Application of the grout is under an air pressure of 40 lb. per sq. in., and successive batches of grout are applied through each injection pipe until further grout is rejected. Obviously, the amount accepted by different pipes varies, as does the distance the grout travels from the point of injection. To date, the quantity injected into individual pipes has varied from none to 50 one-sack batches.

Often the grout travels along the track for considerable distances and may gush up through the pipes immediately ahead. If this occurs, the pipes thus affected are capped and grouting is continued to refusal. At times the grout breaks through the shoulder at the ballast toe line, or even up through the ballast itself, between or below the ties. When such a break-through occurs, the grouting pressure is released immediately, and unless the rupture can be plugged successfully, further injection is stopped at the pipe involved.

All of the roadbed grouting on the New York Central is carried out under traffic, without slow orders. Shortly after the completion of the work at any point, the track is surfaced out-of-face, the area treated is staked off to permit future observations of conditions, and records of subsequent maintenance costs are kept to permit their comparison with former maintenance costs. The actual cost of the grouting itself, as might well be expected, has varied widely with the different conditions encountered, and, more particularly, with the amount of grout required, but to date this has averaged \$1.50 per foot of track.

Sections Reveal Results

With the purpose of observing the character of the concrete formations produced by injecting grout into the subgrade, trenches have been dug across the roadbed at 16 locations. The cross sections included in one of the accompanying illustrations, all of which resulted from these observations, and which are drawn to scale, show the con-



Cross Sections Show Locations of Injection Pipes for Grouting Different Types of Soft Spots

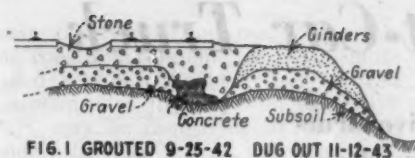


FIG. 1 GROUTED 9-25-42 DUG OUT 11-12-43

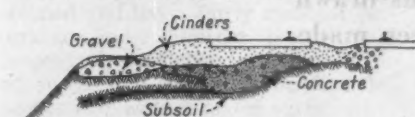


FIG. 2 GROUTED 10-12-43 DUG OUT 8-1-44

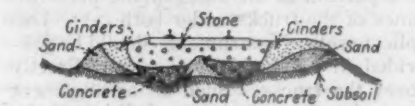


FIG. 3 GROUTED 5-10-41 DUG OUT 6-23-42



FIG. 4 GROUTED 1-12-42 DUG OUT 6-25-42

Cross Sections Determined by Actual Observations After Grouting, Show How the Concrete Formations Seal Off the Soft Subgrade and Help Spread the Load Over It

crete formations found at four of these points.

Section 1 shows the concrete beam formation found beneath the rail at one location, and Section 3 shows the concrete formations found beneath both rails at another location. These concrete beams, which are parallel to the rail and directly beneath it, act not only to stop surface water from reaching the sub-soil in the depressions, but also aid in distributing the load and impact of trains over a wider area.

The concrete shown in Section 3 was injected into the sub-ballast from both sides of the track, while that shown in the other cross sections was injected from only one side of the track. Sections 2 and 4 show slab formations approximately 13 ft. wide, these formations resting directly on the sub-soil and completely filling the depressions.

To the present time, the results of the grouting on the Central, with a few minor exceptions, have been uniformly successful, both in improving track conditions and in reducing routine maintenance costs. Evidences of this are seen in the following information taken from a recent report of the road on its grouting operations.

Two spots, 117 ft. and 195 ft. long, respectively, that required maintenance at least three times a week, are located 1½ miles east of Lythmore, Ont., on the Canadian division. Maintenance costs at these two points prior to grouting averaged \$122.64 and \$126.32 per month, respectively. Following grouting, these costs were reduced to an average of \$3.10 and \$14.60 per month, respectively. The cost of grouting these two soft spots was \$165.12 and \$135.76, respectively, which amounts are not much higher than the average monthly

Summary of Grouting and Related Maintenance Costs New York Central System, West of Buffalo, 1941-1944, Inclusive

Year	Track Feet	Total Cost	Cost per Lin. Ft.	Maintenance Cost Per Month				Maint. Savings Per Mo.
				Before		After		
				Total	Per Lin. Ft.	Total	Per Lin. Ft.	
1941....	1,647	\$1,029.27	\$0.625	\$201.15	\$0.122	\$5.90	\$0.004	\$195.25
1942....	4,907	4,334.11	0.883	1,187.10	0.242	73.95	0.015	1,113.15
1943....	11,882	16,898.69	1.422	2,308.33	0.194	151.19	0.013	2,157.14
1944....	17,943	32,481.61	1.810	4,014.48	0.224	323.29	0.018	3,691.19

maintenance costs at these points prior to grouting. As a result, it is evident that the stabilizing of the roadbed at these two soft spots returned in savings the actual cost of the grouting in less than 1½ months. At the above mentioned rates of saving in track maintenance following the grouting, the work done at these two points paid for itself and saved the railroad a total of \$2,474.24 during the first year. Succeeding years, it is thought, will probably show still higher savings as the subgrade continues to stabilize itself further.

Additional soft spots where grouting has produced an equal degree of improvement are located 1½ miles west of Stevensville, Ont., and near Lythmore, Ont., on the Canadian division; 1½ miles west of La Carne, Ohio, on the Cleveland division; and west of Hillsboro, Ill., on the Illinois division.

Thirteen soft spots were treated in 1941, four of which have not required maintenance since they were grouted. The four locations which have not required attention since grouting formerly required average monthly maintenance to the extent of \$54.40. The average monthly maintenance expense for the other nine soft spots was reduced from \$145.75 to \$5.90. The total cost of grouting all 12 spots was \$1,029.27. The total savings in maintenance cost for these same spots during the first year was \$2,343.

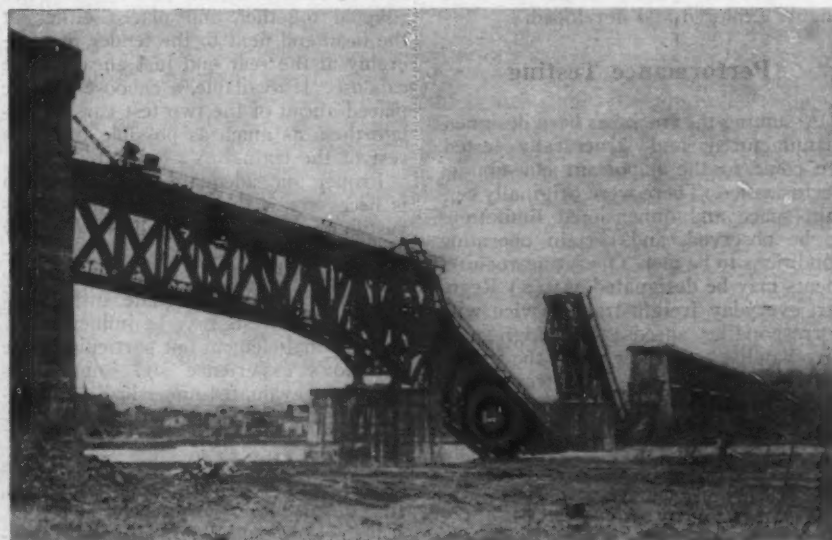
A total of 31 soft spots were grouted in 1942, of which 13 have not required any maintenance to the present time.

Prior to grouting, the 13 spots that have required no attention cost an average of \$314.60 a month for maintenance. The maintenance expense on the other 18 spots was reduced from \$872.50 a month to \$73.95 a month. The cost of grouting the 31 soft spots in 1942 was \$4,334.11. The total savings in maintenance for the 12 months following grouting at these 31 spots was \$13,357.80.

In 1943, a total of 11,882 ft. of track was grouted at a total cost of \$16,898.69. Monthly maintenance of this track was reduced from \$0.194 to \$0.013 per track foot, resulting in total savings of \$25,885.68 in maintenance costs for a single 12 months' period. Similar data covering 1941, 1942, and 1944, are included in the accompanying table.

F. J. Jerome, chief engineer of the New York Central System, West of Buffalo, has general supervision of all roadbed grouting. The sub-soil investigations and initial grouting in the vicinity of Monroe, Mich., were carried out under the direct supervision of F. H. Simpson, assistant chief engineer. The grouting on all of the territory West of Buffalo is being handled by Mr. Simpson with the aid of W. T. Johnston, assistant engineer, in charge of grouting, who actively directs the individual gangs in the field and who has been largely responsible for the development of the equipment and practices now in use.

[A more detailed article of this work, particularly as regards the equipment and methods employed, appears in the May, 1945, issue of Railway Engineering and Maintenance.]



U. S. Army from British Combine

Damaged Railway Bridge Over Meuse River, Vise, Belgium

Development of the Freight-Car Truck

Sound design must be accompanied by effective structural and performance testing — Conclusions drawn from such high-speed service tests as have been made

FREIGHT car truck development may be divided roughly into two phases, design and testing, of which the latter includes both structural and performance testing. Structural testing comprises checks to determine strength of the various individual parts or combination of parts. Completely equipped physical, chemical, and metallurgical laboratories, with competent personnel, are needed.

The physical laboratory is concerned with determining whether the physical properties of the parts are in accordance with specified requirements. This requires the making of tension and compression tests and includes the static testing of full size bolster and side frame castings to determine deflection, set, ultimate load, type and location of failure, in accordance with A. A. R. prescribed procedure.

Dynamic or fatigue testing of a complete side-frame casting also affords valuable data as to static calibrations and dynamic bounce tests of spring suspension systems. Wear testing of rubbing parts, together with visual and dimensional checks to see that drawing and specification requirements are met, should not be overlooked.

The chemical and metallurgical laboratories' responsibility is to see that the composition and heat treatment of each part is satisfactory. Also, like the designing engineer, they should continually be striving further to improve the product. New heat treatments of existing steels, or different compositions having definite advantages for application to freight-car trucks, should be thoroughly explored and developed.

Performance Testing

Assuming the truck has been designed, manufactured, and structurally tested, we come to the important question of performance. There were originally certain space and dimensional limitations to be observed, and certain operating conditions to be met. Operating requirements may be designated as: (a) Regular, everyday freight-train service with corresponding speeds; (b) high-speed merchandise service in which the freight car is operated in passenger trains or in special trains with speed up to 90 m.p.h.; (c) a combination of both.

I know of no better way to test the performance of a truck than actually to place it under a car and subject it to the

By R. B. COTTRELL
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American Steel Foundries*

operating conditions under which it is designed to function. To investigate performance thoroughly and adequately, suitable equipment and a place to operate it properly is required. An ideal set-up for such work would consist of two standard A. A. R. box cars equipped to provide accurate and completely detailed observations and records of freight-car truck performance.

One of the cars should be equipped with trucks of known performance and the other one with experimental trucks under investigation for comparison of performance under similar conditions of track, speed and lading.

Proper Instrumentation

For high-speed testing it is best for the two cars to be combined with a high-speed locomotive and three standard passenger cars to form a test train complete in itself. The passenger cars are desirable because they are equipped with regular passenger trucks and act as buffers to separate the test cars, thus eliminating outside influences as much as possible. For operation in regularly scheduled passenger trains, the two test cars may be coupled together and placed at the head end next to the tender. If truck performance is to be investigated at regular freight-train speeds and operating conditions, the two test cars are coupled together and placed either at the head end next to the tender or preferably at the rear end just ahead of the caboose. If available, a caboose may be placed ahead of the two test cars to isolate them as much as possible from the rest of the train.

Proper and adequate instrumentation is necessary if the full value of any investigation is to be realized. Merely placing a freight car in a train and having someone ride it does not, in my opinion, represent adequate instrumentation. Such tests may be influenced by the personal element but particularly the operator's experience and impressions cannot be evaluated numerically and become permanent records for future comparison.

All variables that might affect results should be kept to the absolute minimum. Instruments for recording accelerations, I believe, should be mounted on supports anchored directly to the body bolsters, thus eliminating any errors due to

floor conditions and assuring accurate comparison at all times of the performance of the trucks under both cars. Duplicate sets of instruments should be provided in each end of each car directly over the trucks. Such an arrangement provides data of riding qualities of the trucks independent of car body conditions and construction. If the question of car body effect on riding qualities is introduced, then it may be desirable to supplement the instrumentation by additional ones on the floor of the car at the center.

It is necessary that all charts be marked or coded simultaneously for comparison purposes. A system of dots and dashes representing mile posts, stations, crossings and curves, is very helpful in reviewing the results of the tests. In addition, a log of each run should be kept and include data as to speed at each mile post or station, a record of the code markings and counter readings at designated locations, as well as all other information of value and interest.

It is obvious that while instruments are indispensable in measuring riding quality and performance, trucks must also be observed in action if complete data are to be obtained. For this purpose large, clear vision windows should be strategically located in the floor at the corners of each car. They will permit observation of the trucks throughout the tests and notes regarding their action at various speeds should become a part of the record.

The test cars should be arranged so that runs may be made under all conditions of loading from minimum to maximum amount permitted at rail. Ordinarily, runs at the maximum and minimum rail loads which the cars may encounter in service, are sufficient to determine truck performance. However, runs at intermediate loads may be made to check action and riding quality under such conditions.

Track Conditions Vital

The type and condition of track over which the test cars are operated are of extreme importance. Track suitable for this purpose should include a smooth portion representative of high-grade main line in good condition. There should also be a stretch of rougher track typical of secondary main line not in the best of condition. A number of moderate curves with one or two of the sharper variety, together with some switches, crossovers, rail and highway crossings, are desirable. The test run should be long enough to permit ade-

This is an abstract of a paper presented at the annual meeting of the American Society of Engineers, held at New York, November 27 to December 1, 1944.

quate observations and recording under all conditions encountered. A definite speed schedule should be set up and maintained so that tests on successive days may be compared. If the truck under the base car is not altered or modified and has a fairly constant performance under different speeds, it will compensate somewhat for non-uniform test speeds, but should not be depended upon to take care of major variations.

Accurate wheel contours should be maintained to prevent the introduction of another variable. Concentricity, also, is important and should be maintained. For high-speed operation, the journal-box packing and lubrication should be given preferred attention. A. A. R. waste-retaining ribs in the boxes are of real help in preventing hot boxes and are well worth while. Rough-riding trucks generally result in waste disturbance in the boxes, with higher temperatures and possibility of waste grabs. As trucks with longer spring travel and easier riding qualities are being placed in service in increasing quantities, a record of hot boxes of such equipment compared to regular types, would be of interest. As hot boxes are rather expensive occurrences, it may be possible that a material reduction in their number would more than offset the additional cost of the longer travel springs. Such a study would be well worth while.

Variable Load Requirements

One of the most serious and difficult problems in truck design is the one of proper spring-suspension system to take care of the wide variation in load requirements. The system must, necessarily, have sufficient capacity to take the maximum rail load specified and at the same time should provide a satisfactory ride under minimum load conditions. When it is considered that the load on one spring system of a 50-ton box car may vary from approximately 7,800 lb. under empty car conditions to about 40,000 lb. when fully loaded, the magnitude of the problem is apparent. It has been thoroughly proved that it is possible to design a freight-car truck which will give a satisfactory performance for all conditions from empty car to full rail load and at speeds up to 90 m.p.h. or above; however, the riding qualities must necessarily be a compromise. To provide a freight-car truck with a spring system suitable for the full rail load of 169,000 lb. and properly controlled to prevent resonance, means that the spring group must be stiffer than would be the case if the maximum lading were restricted, say to 145,000 lb., 136,000 lb., or even lower.

In addition to the load variation that is encountered, there is also the problem of speed to be considered. The A. A. R. high-speed tests of 1939 demonstrated rather thoroughly that below operating speeds of 60 m.p.h. the problem is mainly one of resonance, while at speeds in excess of this it is the dynamic effect of track irregularities. Subsequent tests

with which I have been connected also demonstrated this and thus confirm the A. A. R. results.

Fundamentals Demonstrated

From the results of the A. A. R. high-speed tests of 1939 and subsequent work, some fundamentals of freight-car truck design for high-speed service have, in my opinion, been demonstrated. They are as follows and not necessarily in the order of their importance.

Long-Travel Springs—In order to cushion properly the high velocity impacts, long travel, soft springs are necessary. It has been found that about $3\frac{3}{4}$ in. travel is sufficient to give a ride resilient enough to prevent damage to lading and, also, is about the maximum amount practical for freight cars with the present coupler-height limitations.

Spring-Control Means—Some form of spring control is absolutely necessary and should be adequate to prevent resonance in the system at operating speeds. Mechanical friction offers a satisfactory means to minimize the large-amplitude vibrations developed as critical speeds.

Minimum Control Desirable—Friction-spring control, by its very nature, increases the spring resistance; it makes spring action more sluggish and less effective as a cushioning means. Hence there is a certain optimum amount of control or friction which cannot be exceeded without detracting from the smooth riding qualities so essential in high-speed service.

Adequate Reserve Travel Under Maximum Static Load—Sufficient additional or reserve travel should be present in the suspension system after the full static load has been applied to handle the dynamic shocks that will be encountered from track irregularities. If this is not available, there is the danger of springs going solid with resulting loss of cushioning.

Spring Planks—The question of the necessity for a spring plank in a freight-car truck is one that has and still receives a great deal of discussion. Well over one hundred thousand freight cars designed for the elimination of the spring plank have been in service on the railroads of this country for many years. Periodic inspections have shown them to be operating satisfactorily and safely. The elimination of the spring plank not only omits a troublesome part but permits a reduction in weight and allows additional room for longer-travel springs.

It has been thoroughly demonstrated that resilient squaring means may be used which will prevent undesirable truck actions such as nosing, shimmy and racking. The use of such devices will permit the truck to go out-of-square naturally, in negotiating a curve, but will tend to bring it back into square again after this need has passed.

Swing Motion Not Necessary—It has been proved, at least to my own satisfaction, by riding test cars equipped

with non-swing-motion trucks at speeds up to 96 m.p.h., that this method of absorbing the lateral forces is not necessary. Other means, such as resilient or frictional control, are suitable and entirely safe and result in considerable saving in weight and cost.

Low Weight and Cost Important—Economy in the use of materials is generally recognized. Simplicity, few parts, ease of manufacture, minimum weight yet adequate strength and low maintenance are some of the things that should not be overlooked in high-speed truck designing.

Considerable progress has been made in the last few years in the use of alloy steels for freight-car parts. The tank program for the U. S. Army has been very helpful to the participating foundries in the casting and heat treatment of alloy-steel castings. The experience gained in the production of armor castings is available for the manufacture of lightweight, high-tensile steel bolsters, side frames and other truck parts.

Lightweight freight-car trucks and cars become increasingly important as the weight restrictions previously mentioned are put into effect. For instance, a 50-ton car suitable for a maximum load at rail of 169,000 lb. may weigh 50,000 lb. empty. If the load is restricted to 145,000 lb. or less, then the light weight of the car should likewise be reduced.

Separable Journal Boxes—I believe it has been thoroughly demonstrated that a freight-car truck can be designed that will operate safely and give an excellent, smooth, soft ride at high speeds with a controlled spring system under the bolster. Such a design uses side frames, with journal boxes cast integral, generally lighter and more economical than the separable types with spring systems at the boxes.

Still in the Future

Roller Bearings—The roller-bearing freight-car truck is still in the future. A few test installations have been made and results carefully watched. The subject is again receiving a good deal of attention and study. Generally speaking, roller bearings may be added to central spring system types of trucks by providing the side frame with pedestal jaws to take the roller bearing journal boxes. Standardized dimensions for such pedestal openings are desirable to eliminate pattern alterations when different roller bearings are used.

Trucks with spring systems over the boxes may also use roller bearings, depending upon the spring and control arrangement and design of roller bearing.

Side Bearing—Proper side-bearing clearances are extremely important to insure satisfactory truck performance. Many derailments that could have been avoided by more frequent inspections and adjustments have been caused by insufficient side-bearing clearance. The truck designer has not had a great deal

(Continued on page 793)

Supply Shortages Imperil R. R. Transport

Falling crosstie production, insufficient rail, track fastenings and other materials presage critical track conditions for 1946-7 and competitive years ahead

By A. C. MANN

*Vice-President Purchases and Stores
Illinois Central System*

THE general shortage of railway supplies has resulted in part from the war's prior demands for the materials previously used by the railroads, in part from the disappearance of normal sources of supply through enemy action and in part from man-power shortages in the industries supplying the materials. These war-imposed shortages have been especially noticeable in basic items of track materials, such as crossties, rail, track fastenings and accessories, frogs, switches and crossings, signal equipment, bridge and building lumber, road-way machines and tools.

For the last five or six months the production of crossties has decreased steadily. Fortunately, the railroads have accumulated, from 1944 production, sufficient crossties to be seasoned, treated and distributed for use during 1945. The great decrease in new production, amounting to more than 40 per cent at present, makes it plain, however, that there will be a great scarcity of treated crossties for use during 1946 and 1947. The railroads are carrying a tremendous burden of traffic, and the failure to keep their tracks in sound condition with new crossties will result in slowing traffic and may, in many localities, cause other serious operating difficulties.

The reasons for the drop in crosstie production do not come into prominent notice because most of the ties are made by local hewers or small sawmills maintaining little more than their own cost records and having no national publicity. If these men find their operations are resulting in financial loss, they simply close up and go into some other line of work.

Small Margin of Profit

The reasons given by certain producers, however, for discontinuing the manufacture of crossties are: (1) Lack of man-power; (2) Inability to obtain new trucks and tires and repair parts for old trucks; and, (3) Failure of ceiling prices of crossties to keep pace with many advances in ceiling prices of boards and other lumber.

The work of making, handling and hauling crossties is laborious. At the best there is small profit in this work. Under present conditions, only the most efficient workers can make any profit at all. When such is the case with experienced labor, the producers cannot be expected to take imported labor and try

to teach such labor to make crossties within their present extremely small margin of profit. The United States Employment Service is of no help in this situation, because if a worker should be referred to a tie camp he would refuse the work because so many better jobs are available.

Conditions surrounding the supply of trucks and repair parts are the same as those prevailing in the lumber industry and many others. Yet it should be recognized that trucks *must* be available for hauling crossties if railroad tracks throughout the country are to be maintained in good operating condition.

Lack of Price Incentive

When Maximum Price Regulations were issued in 1942, MPR-216 came out with ceiling prices for crossties which, in the main, were sufficient to continue the volume of tie production prevailing at that time. Some of the railroads expressed the thought that the prices were high, but not even these increased prices brought about an increase in tie production. Then, not long after MPR-216 became effective, increases in prices of various items of lumber were made. This further change in relationship has continued until the spread between tie prices and lumber board prices is so wide that sawmills formerly producing crossties now cut the entire log into boards.

With all of the assistance that it has been possible, up to now, to give in man-power, in equipment and in ceiling prices of crossties, there appears no chance whatever of restoring the volume of crosstie production existing in 1943; consequently the situation is truly serious. If present conditions continue there is no apparent prospect of the railroads being able to maintain their tracks adequately in 1946 and 1947.

This combination calls for vigorous action. The War Production Board and the Office of Defense Transportation must convince the War Manpower Commission and the Office of Price Administration of the seriousness of the crossties situation. That situation must receive prompt and effective study and action to the end that tie makers may be induced to resume the manufacture of railroad crossties. There must be no further temporizing, no further delay.

From the standpoint of the producers of railway transportation, the Purchases and Stores Division of the Association of American Railroads is handling this subject actively with the general officers of the A. A. R. Various government agencies are thereby being impressed with the need for prompt consideration and action. Let us hope their efforts will prove fully effective.

For the last two years lumber has been one of the most critical items needed in carrying on the war and in the third quarter of 1944 it was put under rigid control by the W. P. B. The heavy demand of the armed services is for 1-in. and 2-in. boards. This results definitely in a shortage of lumber for buildings and car repairs, although it does not seriously interfere with bridge and structural sizes. There is little likelihood of any letup in war demands. In view of the fact that lumber mills are suffering from the same difficulty as crosstie producers, there is reason to expect a continuing shortage in lumber for maintenance work.

Acute Rail Shortage

Next to crossties, our most acute shortage is rail. During 1944 railroads received a little less than 75 per cent of their requirements for the year, due to reduced allocations by the W. P. B. For 1945, the original allotment indicated that the railroads will receive only about 58 per cent of the rail they requested. Unless there is a change for the better in the third and fourth quarters, this allotment will stand, as the allotments for the first and second quarters equal just about 50 per cent of the year's total. This presents a serious situation for the railroads and their users. An analysis of steel rail mill-producing capacity and output develops that new rail for the railroads must compete with shell steel for our armed services, as well as with steel rails on lend-lease commitments. Neither of these competitive conditions can give us much room for complaint, however, as the railroad industry recognizes the need for and is working wholeheartedly toward the ending of the war—an ending which, we likewise realize, must be accompanied by some rehabilitation of countries desolated by the war.

Track fastenings and accessories for use with new rail are assured by the W. P. B., and as has been our experience in the past, track accessories of all kinds will be available as the rail itself reaches us. For maintenance work

This article is an abstract of an address presented before the Maintenance of Way Club of Chicago, on April 23, 1945.

however, there is a different story. The W. P. B. has cut the allocations for the first half of 1945 by 25 per cent under that which the railroads were initially allowed to order. And even with this cut deliveries are slow, many of the items requiring orders placed up to nine months ahead of delivery time. Fabricated track materials, such as frogs, switches, crossings, etc., require 9 to 12 months for delivery, even though the W. P. B. will not allow validation of orders that far in advance.

Signal Material Critical

Many items which go into the manufacture of signals and allied products are in the "critical item" class. The agencies in Washington, however, have been most helpful in recognizing the importance of proper signal installations and maintenance. Therefore, this class of work has been fairly well taken care of, even though deliveries require four to six months after orders are placed. Many substitutions have been necessary.

The need of roadway tools, machines and labor-saving devices as a result of man-power shortages is greater than ever, and it is still necessary to clear requests for these items through the W. P. B., except where the cost is less than \$500. By comparison with 1943 and 1944, there are somewhat better deliveries being offered by the suppliers, indicating some easing in demand by the armed services. There will, undoubtedly, be an opportunity to obtain some types of machines from surplus government sales, which should mean immediate deliveries, although my observation so far is that such surplus machines are being offered first to the dealers in those lines of equipment.

Progressive Thinking

It is certain that in the post-war period the railroads will face keener competition than ever from all forms of transportation: highways, waterways, airways, pipelines and there will be even keener competition among railroads. There will be a demand for faster and more frequent freight service and faster and more comfortable passenger service. The maintenance of way fraternity will be the first to feel the impact of these new demands, for track improvement to accommodate faster train service will be a pressing need.

During the war years research has developed many new lightweight metals, alloys and plastics. Certainly there is talent enough in the maintenance of way field to put to practical use in track and equipment all that war energy has brought forth. We have learned much about reclamation in this period of critical shortages, and yet there will be continued progress, even in this field.

Sources of supply for many items are changing. Operators of strictly war plants are talking of entering the railroad supply field. New products and

devices will certainly appear on the market. We must be alert to all these conditions.

Employee suggestion systems in industry and on some railroads are fast proving that constructive thinking will bring forth workable and profitable ideas. A fertile field for this constructive thinking is track structure. We are indebted to the railroad supply fraternity for much progress and improvement; and yet many of the specific demands for such progress and improvement have originated with practical railroad men. New needs and new ideas will occur to us as time goes on. Let us keep up our progressive thinking. Let us prove to the shipping and traveling public that the railroads comprise a forward looking industry, that it will provide courageously and effectively whatever transportation the future may demand.

Freight-Car Truck

(Continued from page 791)

to say about this very important matter. He is requested to supply places on the bolster for the application of side bearings at designated locations. It then becomes the responsibility of the car builder and railroad to see that proper clearances are provided and maintained.

Center Plates — Nothing has been found in extensive road testing and inspections to indicate that the present A. A. R. design of flat center plate is not entirely satisfactory. Adequate bearing area is necessary for low unit pressures to insure satisfactory life and ease of swiveling. It is felt that the center plate 12 in. in diameter for 40 and 50-ton cars and 14 in. for the 70-ton equipment accomplish this purpose.

Elliptic Springs — A great deal of study and experimental work have been devoted to the subject of elliptic springs and their use in freight equipment. It is possible to use an elliptic spring in conjunction with the present A. A. R. 1915 and 1936 helical coils, having 1½ in. travel, but there are several disadvantages: (1) The elliptic spring is fundamentally heavier than the coil spring for the same resilience, or capacity to absorb work; (2) It is more expensive, because it is an assembly of parts; (3) The necessary capacity, together with the short length permissible, force the design to be relatively stiff, so that it cannot readily be used with the long-travel spring groups that we now know are essential to smooth riding.

Adequate Braking Apparatus

Brakes — The brake equipment and foundation rigging commonly used on all freight cars have in general performed satisfactorily in freight-train service and at present freight-train speeds. It is quite apparent, however, that the trend is definitely toward higher speeds, lightweight cars with the resulting high weight ratio and a broader use

of freight type cars in head-end passenger-train service. These probabilities point rather definitely to the need for more adequate braking apparatus to control properly freight type cars at the higher speeds. In the case of head-end passenger-train operation, the brake system must be more in harmony with that now employed on passenger cars and thus consideration should be given to the use of clasp brakes, truck-mounted brake cylinders, bushed levers and rods and the various quick-action and release features now more or less common to passenger equipment. Likewise, the wide differential in weight at the rail between empty and loaded cars, requires some compensating means such as an empty-and-load or a variable-load brake system to provide braking uniformity and equalization throughout the train.

From a mechanical and design standpoint, the present freight-car brake with respect to the truck is rather simple, requiring nothing more than suspension means on truck sides, dead-lever brackets on bolsters, and such other brackets or shelves as are used for brake-beam safety guards. However, should the operating conditions set up by higher speeds lead to the employment of truck-mounted brake cylinders, clasp brakes and foundation brake gear approaching the present passenger types, the truck design is materially affected. Not only are design problems involved pertaining to clearances, weight and strength of the component parts, but possibly riding qualities would be influenced. For these reasons I strongly feel that the truck manufacturers should have more of a voice in all matters relating to truck design, the spring systems employed, and the brake arrangement.

Additional Tests Needed

Considerable data has been accumulated by the A. A. R., also by freight-car truck manufacturers, relative to riding qualities and performance of trucks at high speeds, which has resulted in the improvement of freight-car suspension systems and truck design so some are capable of operating safely and satisfactorily at speeds of 90 m.p.h. or over.

In my opinion, there is still need for additional tests and investigations to determine, for instance: the impacts that are transmitted directly through the wheels to the journal boxes of the side frame and the corresponding impact received by the car body; the effect of long continuous rails on riding qualities of freight trucks; effect of relatively solid and unyielding road bed which may be introduced into the track structure in the future by the increasing use of concrete.

These questions should be anticipated and I hope that before long the transportation situation will permit more extensive road testing than has been possible in the last few years, so that the answers to these, as well as other questions, may be obtained.

Research Brings Better Railroading

Back of the Norfolk & Western's transportation record are years of steady and progressive development based on laboratory and field studies

THE research department of the Norfolk & Western has been dedicated to the improvement of railroad facilities and equipment and has added important contributions to the improvement of essential parts such as car wheels, couplers, draft gear, rails and other items which have benefited all the railroads of America. The Norfolk & Western's average annual expenditure and use of \$20,000,000 of materials and supplies (excluding fuel and new equipment) are controlled by research, analyses and tests. The co-ordinated research embraces not only modern, physical, chemical and bacteriological laboratories, its laboratory on wheels—a dynamometer car, together with competent staffs of trained scientists, technicians, field engineers, inspectors and water service supervisors but also the cooperative activities of officers and personnel of the mechanical, operating, purchasing, stores, signaling, engineering and maintenance departments.

In 1944 the Norfolk & Western han-

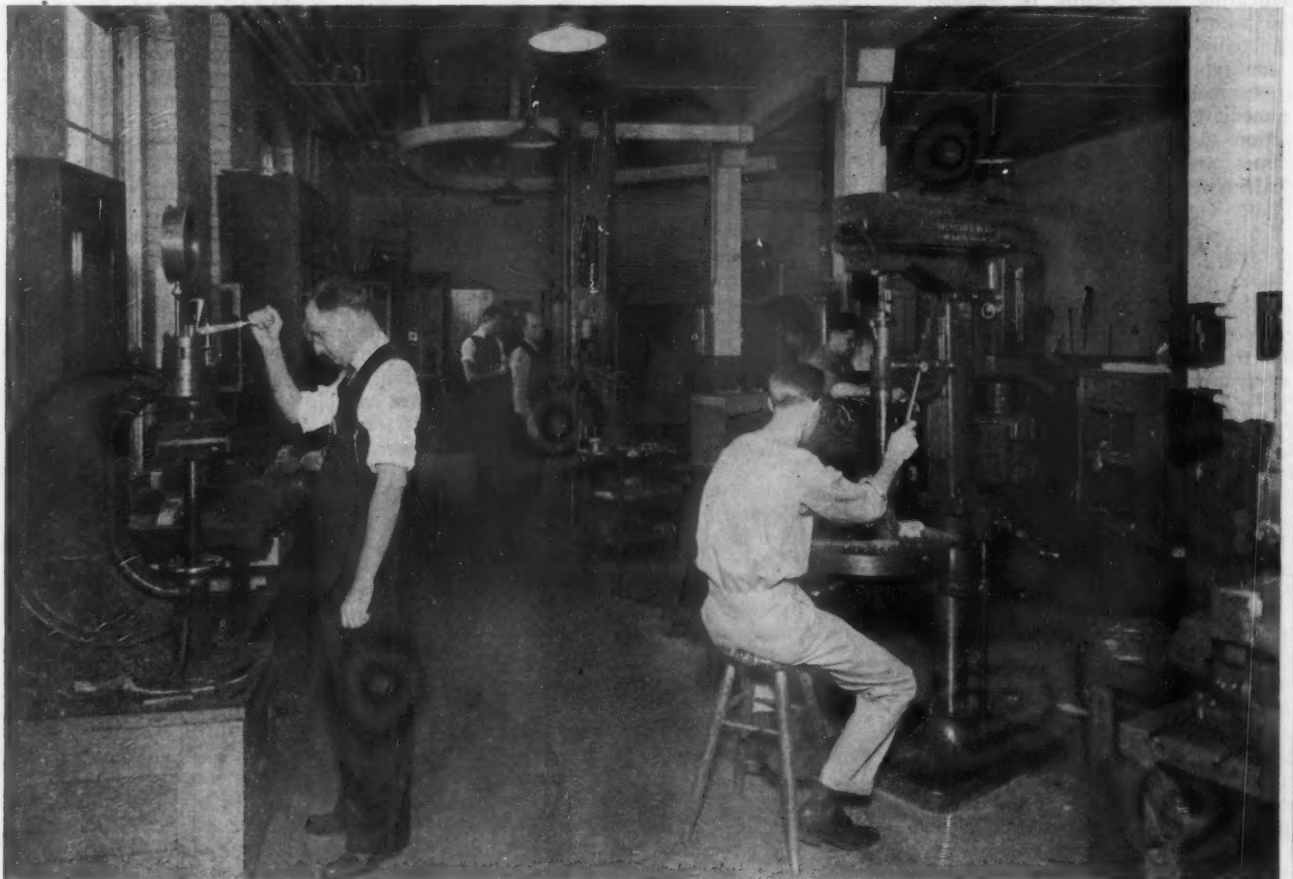
dled 59 per cent more freight with 42.3 per cent fewer locomotives, and did the job with none of the congestion and delays that were so prevalent in 1918. As a result of research N. & W. locomotives are more modern in design and construction and easier to maintain; they are operated at higher efficiency and they perform 33.9 per cent more service than their 1918 counterparts. Freight train speed has increased more than 61.2 per cent in that period and freight cars now travel 62 per cent more miles daily. Research has brought a steady improvement in the efficient use of coal so that twice as much work now is obtained from a pound of coal than was possible 25 years ago.

Thousands of Tests Run

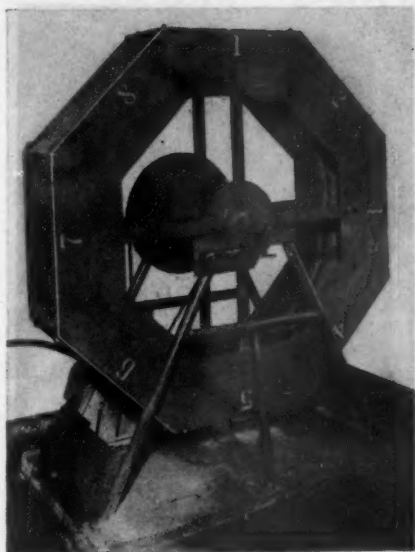
Through the research and testing organization practically everything bought and used by the N. & W. including lubricants, cement, paints, ballast, rails, sand, coal, flashlight batteries and liter-

ally thousands of other items are tested, analyzed and selected to meet specific requirements and to render full value. Also ways and means have been found to rectify leaking locomotive boilers; a protective coating has been developed for the interior of coal cars; startling new developments were made in the manufacture and testing of journal bearings; journal packing was improved; and the value of shot peening of highly stressed parts for equipment now is being studied. Moreover, several unusual instruments and testing machines were developed in N. & W. laboratories for special testing purposes, such as in the course of improving the treatment of boiler water.

Under the leadership of R. G. Henley, general superintendent of motive power and chairman of the Mechanical Division of the Association of American Railroads, H. W. Coddington, engineer of research and tests, has a total staff of some 30 trained scientists, engineers and technicians engaged in laboratory and



Part of Norfolk & Western's Physical Laboratory Where Modern Testing Equipment Plays Such a Prominent Role



An Abrasive Testing Machine Developed in N. & W. Laboratories to Predict the Service Life of Coatings for the Interior of Coal Cars

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More Light on Batteries

The N. & W. is one of the few companies that normally buys its flashlight batteries on a scientific basis and knows exactly what to expect in the way of service. With normal annual requirements approximating 36,000 batteries, the N. & W. physical laboratory has one of the few instruments in the country (outside of those owned by manufacturers) for testing flashlight batteries in accordance with specifications of the U. S. Bureau of Standards. Designed and built by members of the staff, the N. & W. testing apparatus is relatively simple and compact. Its use has proved the error of the policy of purchasing flashlight batteries consistently from the lowest bidder, for, under normal conditions, tests have proved that the service that may be expected from some more costly flashlight batteries is greater than the proportionate increase in price.

The development of an efficient pro-

TECTIVE coating for the interior of coal cars is another achievement of N. & W. research. Comprising petroleum asphalt, asbestos fiber and petroleum thinner, the coating adheres tenaciously and extends the service life of car bodies for at least a full year. Initial material and labor costs are comparatively small; 10 to 12 gallons of car cement are required for each car and the consistency of the material is such that it may be sprayed or brushed.

Abrasive Testing Machine

N. & W. coal cars average approximately two round trips per month and they are exposed to severe corrosive influences. Damage has been considerably reduced through the use of an asphaltic coating which is applied over one coat of chromate primer when the cars are built; no attempt is made to recoat during the service life of the equipment. Because its car cement must withstand severe abrasive action of the lading the N. & W. research laboratory designed an abrasive testing machine which was built at the Roanoke shops and later installed at the laboratory for conducting the necessary confirmatory tests. The octagonal shaped machine includes eight removable steel panels which are coated with the material to be tested and a weighed quantity of round stones comprises the abrasive charge as the machine is rotated about its central axis.

It was through preliminary tests of this character in conjunction with applications to coal cars that the N. & W. standard car cement was developed and the machine is used periodically in comparative tests of commercial or proprietary coatings and is sufficiently reliable to produce identical results in a series of tests of the same material. Incidentally, the abrasive testing machine also has been found invaluable for predicting the service life of paint used to mark safety zones on station platforms and for marking roadways and traffic lanes in and about shop buildings.

Not long ago the N. & W. was afflicted with what appeared to be a veritable epidemic of leaking from a certain group of their high pressure locomotive boilers shortly after they were placed in service. Leaks developed around the rivet seams and preliminary examinations pointed to damage of the plate material surrounding the rivets, as a result of high driving pressures used in riveting. In laboratory studies specimens of boiler plates were drilled in accordance with regular shop practice and, after a series of exacting measurements of hole diameters, sections were riveted together with varying pressures and holding periods. Later, the rivets were removed and observations were made of the diameter of the holes and the changes that took place along the caulking edges of the plate. As a result it was determined that exceptionally high stresses, well beyond the elastic limit of the steel, were being set up by riveting practices customarily used in boiler construction.

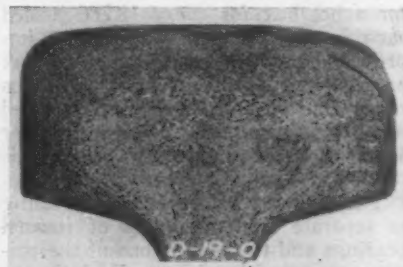
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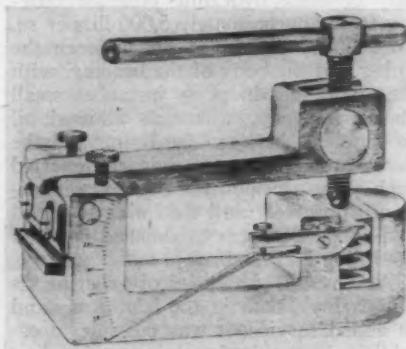
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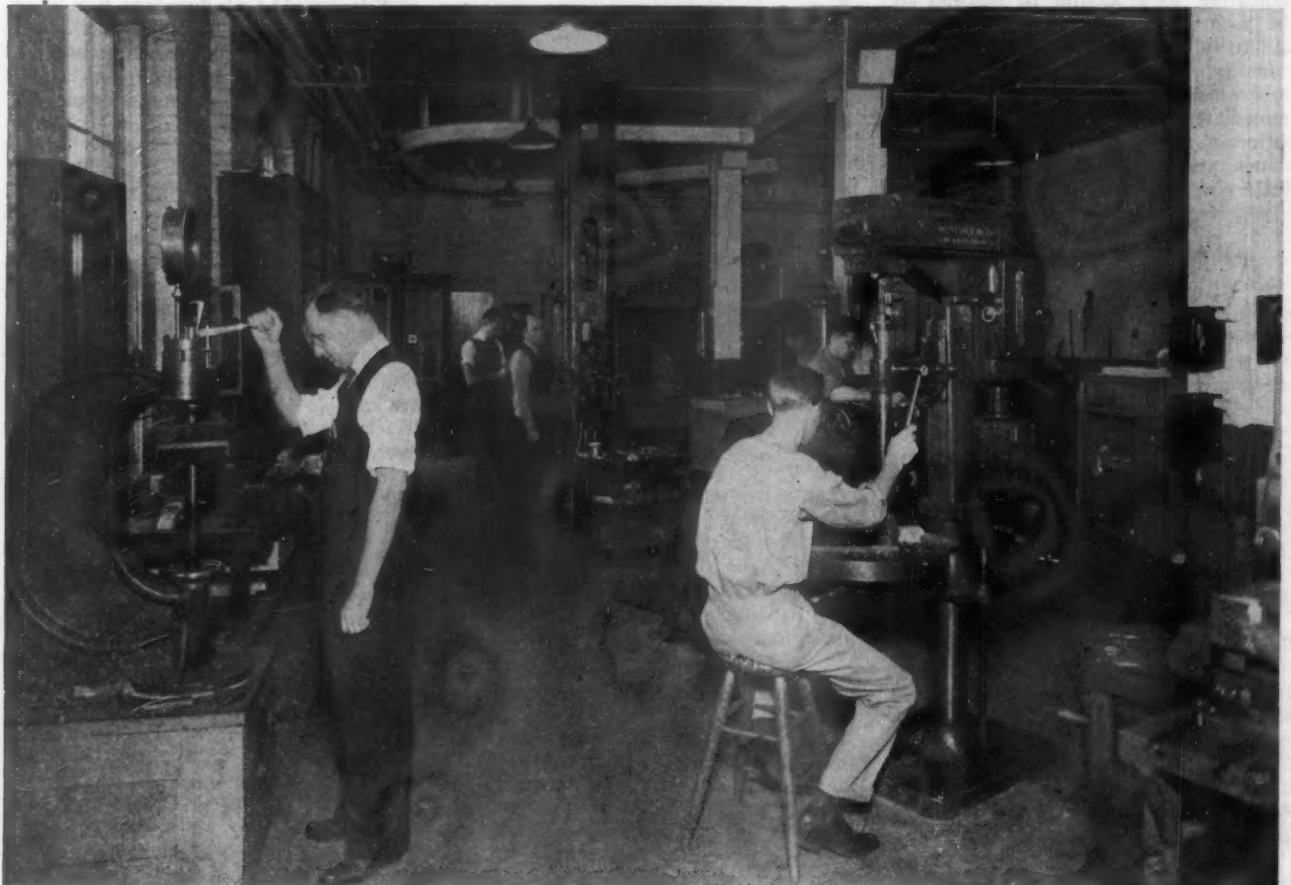
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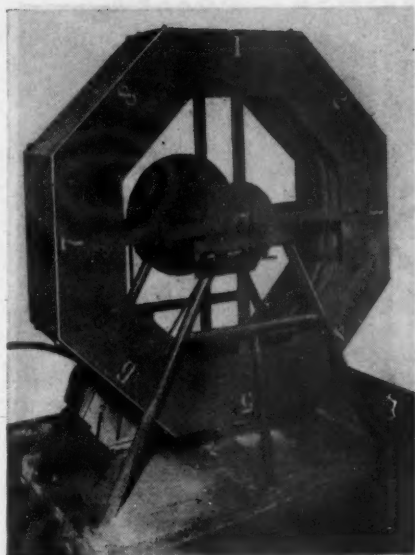
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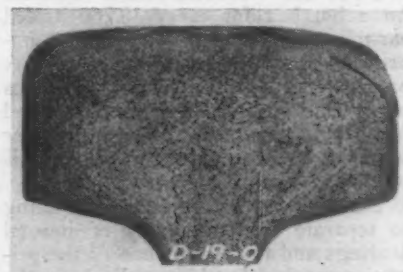
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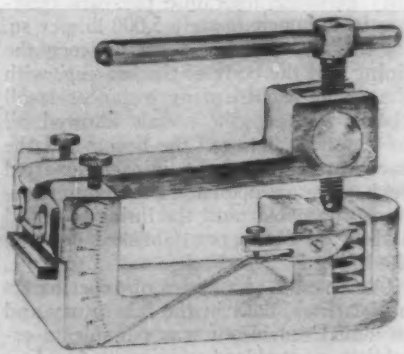
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the inside or gage corner of steel rails in certain territories. Shelling has been noticed particularly in rails laid since 1934 and is believed to be due or related to internal stresses being produced under wheel loads beyond the fatigue strength of the steel; it is the development of a series of small cracks which generally originate below the surface of the metal and progress outward and inward.

Although the cracks usually are discovered before actual failure occurs, the Rail Committee of the A. R. E. A., in its 1945 report, points out that shelling is more serious and widespread than previously was realized. While no solution yet has been found for the problem, the committee points to definite progress and through the co-operative efforts of N. & W. research comprising the study of rail steel composition, heat treatment, rail head contours, wheel and rail contacts and pressures, substantial progress has been made in solving a most irritating problem.

Better Journal Bearings

Research and co-operative efforts of the car and operating departments primarily have been responsible for the tremendous reduction in hot boxes; in 1944 only one loaded car was set off per 1,576,284 loaded car-miles on the N. & W., whereas in 1918 one car was set off for a hot box for every 18,760 loaded car-miles. Better journal bearings, improved car oil, and better journal box packing—all the result of research, plus closer inspection, better packing and handling of equipment as well as better supervision—have brought about this pronounced improvement.

The tendency of the soft metal lining to separate from the body of journal bearings and to crack is one of the primary causes of hot boxes. Early in the N. & W. laboratory studies of this problem, it was found that sometimes the strength of the bond between the lining and the bronze body was not sufficient to prevent oil from being forced between the two metals while the car was in motion. The thrust loads between the axle collar and the end of the journal bearing may generate hydraulic pressure ranging from approximately 5,000 lb. per sq. in. to 7,000 lb. per sq. in. between the lining and the body of the bearing, with the result that in many instances small checks between the metals allowed oil to penetrate between the lining and the back, and subsequent impacts exerted such pressure upon the oil that separation progressed until the lining loosened and an oil film was established between the lining and the back.

As a result of a series of experiments on bearings, both in the laboratory and in actual service, it was possible to establish a standard minimum bonding strength requirement which now is included in Norfolk & Western specifications for the purchase of journal bearings. Research has been responsible not only for the better journal bearings but also for improving the quality of bearings that are relined.

Research also is responsible for the design and development of a small portable testing instrument used to test the bond strength of journal bearings at manufacturing plants. The instrument weighs approximately 7½ lb. and can be carried conveniently and with relative ease. A specimen measuring approximately 2 in. by ½ in. is removed from the central part of the back of a bearing, placed in position in the machine and pressure is applied gradually by a screw acting through a cantilever arm with a ratio of 10:1 until the lining breaks from the bronze; an indicator shows the load required to break the lining from the bronze. The machine is calibrated in pounds pressure against a spring.

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The proposal is that "the heterogeneous collection of transportation agencies and facilities presently serving the 29 cities and towns which are contained in the arc of 12-mile radius of the center of the city of Boston . . . be combined into a single unified system to be operated under a single authority."

"It is evident," the report goes on to say, "that only a unified and modern system can bring about a service that can attract new and additional users and arrest the trend toward the use by commuters of the automobiles which so overcrowd and overtax the City of Boston and its facilities in normal times." The report notes that the population has been moving beyond the area served by present transportation facilities, and that the volume of traffic of these agencies was, before the war, diminishing, while the trend toward "commuting" by automobile was rapidly increasing. In summarizing the situation of steam railroad suburban services in the Boston area the commission's report says in part:

"We assume that the reorganized New Haven Railroad will not be required to operate passenger service on the lines of the Old Colony Railroad at large recurring annual deficits.

"Should the reorganized New Haven elect to discontinue passenger service on the Old Colony under the decree of reorganization, as seems very likely to be the case, a suitable opportunity is given the Commonwealth under the approved plan of reorganization in the form of an option to purchase at salvage value that portion of the Old Colony which extends from Boston to Braintree at any time within ten years after the termination of such passenger operation because of losses in excess of the figures established in the decree. The right is also given to make joint use of such facilities as are not required for the exclusive use of the Commonwealth for a rapid transit system.

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that a unified and comprehensive rapid transit system be initiated as soon as possible so that the important communities affected be not left without suitable service and be forced to rely upon an haphazard and inadequate collection of conflicting services with all the unhappy consequences entailed.

"As it has become increasingly clear that the Commonwealth must eventually provide a system of rapid transit and as the object sought to be accomplished is mutually advantageous to the railroads and to the Commonwealth, it is reasonable to expect that the necessary acquisitions of railroad rights of way, or leases thereof, be at nominal cost to the public and the joint use of facilities be on a fair and equitable basis.

"In 1920, the three steam railroads serving Boston handled 79,000,000 people in and out of the city, the great bulk of them commuters. In 1941 the number handled had declined to 34,200,000. There were two principal reasons for this decrease, first the fact that railroad commuters in ever increasing numbers were resorting to automobiles for local transportation, and second, the extension of bus lines into areas previously served by the steam roads. After the war, the use of automobiles by commuters is very likely to be resumed and to increase, unless a unified system of rapid transit is provided.

Not the Railroads' Province

"While the number of railroad passengers during the morning and evening peak hours has declined less than during the remainder of the day, the loss of traffic together with the increasing trend of costs, coupled with the nature of steam operations, i.e., locomotives with varying numbers of cars, has resulted in persistent declines in the amount of train service operated. There is no reliable indication that the steam roads will have a place in the improved suburban transportation so vital in the post-war period, except to the extent that their rights of way, tracks and facilities in the metropolitan area should be utilized, where feasible, in the transit plan. The railroads within the area should be restricted to their trunk line long haul passenger and the essential freight service, which, after all, is their real province."

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At various convenient points, approaching the center of the city, connections would be constructed to link the suburban railway lines with the subways and elevated structures of existing rapid transit lines. At these points the trains from the new transit lines, all to be electrified, would be diverted from the railroad rights of way and through tunnels serving the central part of the city, so that suburban trains would not terminate, as at present, at the steam railroads' urban terminals.

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All bus and trolley surface transportation would feed into the rapid transit lines, with free transfers, so that a completely co-ordinated local passenger transportation monopoly would be established, under a state-owned "authority." Most existing electrified transit lines are owned by the Boston Elevated Railway which is state-operated but, in part, privately owned. The new plan would complete the state's acquisition of the Boston Elevated, in order to eliminate federal income taxes which were estimated to have been \$600,000 on the property in 1944.

The commission estimates that the cost, exclusive of new equipment, of all the construction necessary to establish these rapid transit lines (i.e., construction consisting largely of electrification and building of short connecting tracks) would be \$33,600,000, "or a cost comparable to one multiple-deck or 'super' highway through Boston." "A rapid transit line produces direct revenue, a highway does not," the report observes.

"Estimates of costs to construct and operate the rapid transit extensions proposed in this report," it is stated, "do not include any item of cost for the acquisition of the railroad rights of way or for the use thereof. Commutation or short haul service by the railroads is a costly and generally unprofitable operation. We believe railroad management will admit that to be the fact. . . . The construction and operation of a unified rapid transit system would relieve the railroads of an unprofitable operation, so we regard it as only fair that they should permit the use of their rights of way at nominal cost to the public. The proposals herein contained provide for the continuation of freight service and also for the continuation of long distance passenger service by the railroads. The

Research Brings Better Railroading

Back of the Norfolk & Western's transportation record are years of steady and progressive development based on laboratory and field studies

THE research department of the Norfolk & Western has been dedicated to the improvement of railroad facilities and equipment and has added important contributions to the improvement of essential parts such as car wheels, couplers, draft gear, rails and other items which have benefited all the railroads of America. The Norfolk & Western's average annual expenditure and use of \$20,000,000 of materials and supplies (excluding fuel and new equipment) are controlled by research, analyses and tests. The co-ordinated research embraces not only modern, physical, chemical and bacteriological laboratories, its laboratory on wheels—a dynamometer car, together with competent staffs of trained scientists, technicians, field engineers, inspectors and water service supervisors but also the cooperative activities of officers and personnel of the mechanical, operating, purchasing, stores, signaling, engineering and maintenance departments.

In 1944 the Norfolk & Western han-

dled 59 per cent more freight with 42.3 per cent fewer locomotives, and did the job with none of the congestion and delays that were so prevalent in 1918. As a result of research N. & W. locomotives are more modern in design and construction and easier to maintain; they are operated at higher efficiency and they perform 33.9 per cent more service than their 1918 counterparts. Freight train speed has increased more than 61.2 per cent in that period and freight cars now travel 62 per cent more miles daily. Research has brought a steady improvement in the efficient use of coal so that twice as much work now is obtained from a pound of coal than was possible 25 years ago.

Thousands of Tests Run

Through the research and testing organization practically everything bought and used by the N. & W. including lubricants, cement, paints, ballast, rails, sand, coal, flashlight batteries and liter-

ally thousands of other items are tested, analyzed and selected to meet specific requirements and to render full value. Also ways and means have been found to rectify leaking locomotive boilers; a protective coating has been developed for the interior of coal cars; startling new developments were made in the manufacture and testing of journal bearings; journal packing was improved; and the value of shot peening of highly stressed parts for equipment now is being studied. Moreover, several unusual instruments and testing machines were developed in N. & W. laboratories for special testing purposes, such as in the course of improving the treatment of boiler water.

Under the leadership of R. G. Henley, general superintendent of motive power and chairman of the Mechanical Division of the Association of American Railroads, H. W. Coddington, engineer of research and tests, has a total staff of some 30 trained scientists, engineers and technicians engaged in laboratory and



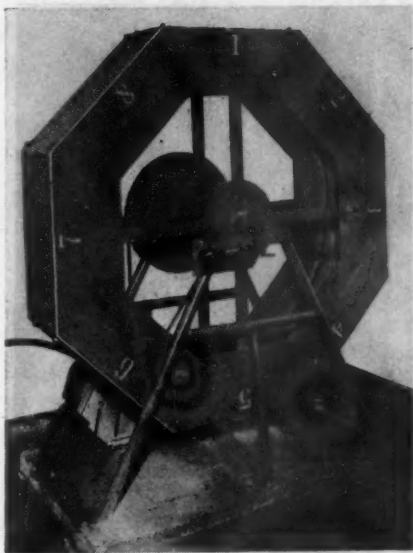
Part of Norfolk & Western's Physical Laboratory Where Modern Testing Equipment Plays Such a Prominent Role

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An Abrasive Testing Machine Developed in N. & W. Laboratories to Predict the Service Life of Coatings for the Interior of Coal Cars

field work, and divided into three sections. G. E. Baumgardner, assistant research engineer, is in charge of the physical laboratory with a staff of 14 material inspectors, technicians, metallurgists and machinists. C. L. Crockett, chemist, is in direct charge of the chemical and bacteriological laboratories with 6 laboratory technicians and 3 water service supervisors as his assistants. R. M. Pilcher, mechanical inspector, assisted by 3 assistant engineers and one material inspector is charged with following field observation, performances and locomotive development. Close coordination is maintained with other departments and frequently the work of the scientists and technicians in the research department is supplemented by the cooperation of trained engineers, technicians or mechanics from other departments.

More Light on Batteries

The N. & W. is one of the few companies that normally buys its flashlight batteries on a scientific basis and knows exactly what to expect in the way of service. With normal annual requirements approximating 36,000 batteries, the N. & W. physical laboratory has one of the few instruments in the country (outside of those owned by manufacturers) for testing flashlight batteries in accordance with specifications of the U. S. Bureau of Standards. Designed and built by members of the staff, the N. & W. testing apparatus is relatively simple and compact. Its use has proved the error of the policy of purchasing flashlight batteries consistently from the lowest bidder, for, under normal conditions, tests have proved that the service that may be expected from some more costly flashlight batteries is greater than the proportionate increase in price.

The development of an efficient pro-

TECTIVE coating for the interior of coal cars is another achievement of N. & W. research. Comprising petroleum asphalt, asbestos fiber and petroleum thinner, the coating adheres tenaciously and extends the service life of car bodies for at least a full year. Initial material and labor costs are comparatively small; 10 to 12 gallons of car cement are required for each car and the consistency of the material is such that it may be sprayed or brushed.

Abrasive Testing Machine

N. & W. coal cars average approximately two round trips per month and they are exposed to severe corrosive influences. Damage has been considerably reduced through the use of an asphaltic coating which is applied over one coat of chromate primer when the cars are built; no attempt is made to recoat during the service life of the equipment. Because its car cement must withstand severe abrasive action of the lading the N. & W. research laboratory designed an abrasive testing machine which was built at the Roanoke shops and later installed at the laboratory for conducting the necessary confirmatory tests. The octagonal shaped machine includes eight removable steel panels which are coated with the material to be tested and a weighed quantity of round stones comprises the abrasive charge as the machine is rotated about its central axis.

It was through preliminary tests of this character in conjunction with applications to coal cars that the N. & W. standard car cement was developed and the machine is used periodically in comparative tests of commercial or proprietary coatings and is sufficiently reliable to produce identical results in a series of tests of the same material. Incidentally, the abrasive testing machine also has been found invaluable for predicting the service life of paint used to mark safety zones on station platforms and for marking roadways and traffic lanes in and about shop buildings.

Not long ago the N. & W. was afflicted with what appeared to be a veritable epidemic of leaking from a certain group of their high pressure locomotive boilers shortly after they were placed in service. Leaks developed around the rivet seams and preliminary examinations pointed to damage of the plate material surrounding the rivets, as a result of high driving pressures used in riveting. In laboratory studies specimens of boiler plates were drilled in accordance with regular shop practice and, after a series of exacting measurements of hole diameters, sections were riveted together with varying pressures and holding periods. Later, the rivets were removed and observations were made of the diameter of the holes and the changes that took place along the caulking edges of the plate. As a result it was determined that exceptionally high stresses, well beyond the elastic limit of the steel, were being set up by riveting practices customarily used in boiler construction.

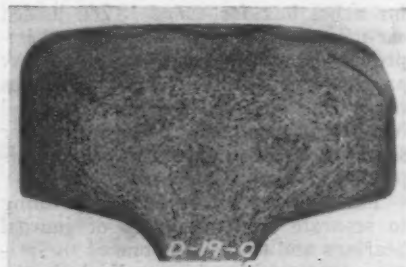
Corrosion embrittlement, first assumed

as a basic cause for leaking seams, was not the reason. A careful analysis of laboratory results clearly indicated that fatigue cracks developed around the rivet holes as a result of the high driving pressures employed in the boiler shop and that the leaks were caused by mechanical abuse of the steel plate; the small checks developed during riveting opened the door for later corrosion and intercrystalline cracking or embrittlement. High stresses also were set up in the process of forming the boiler shell.

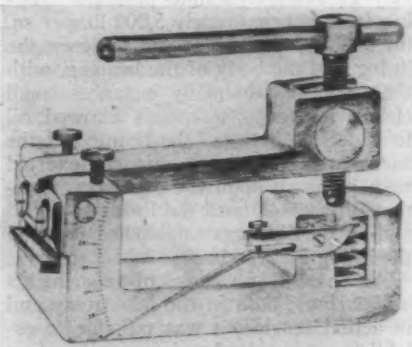
A special furnace was designed and built to relieve some of the stresses introduced in the forming of the sections of locomotive boilers. For each new boiler, the sections or courses are placed in the special furnace and heated to and held at temperatures approximating 1,100 degrees F. for a predetermined period. Afterwards the boiler sections and furnace are permitted to cool slowly. Thus N. & W. high pressure locomotive boilers are going into service insured against leaking at the seams by reason of the control that has been established in the boiler shop.

How to Prevent Rail Shelling

The research department has studied the cause and prevention of a condition known as "shelling", which occurs along



A Cross-Section of the Head of a Rail Through an Area Appearing as a Black Spot on Surface. There Has Been Considerable Fatigue Development Below the Head Surface and an Internal Crack Has Progressed to the Lip Formed at the Gage Side (Right) Due to Head Flow



Lightweight Portable Testing Instrument Developed by N. & W. Research to Test the Bond Strength of Journal Bearings. The Test Specimen Is in Place Beneath the Wedge-Shaped Part That Transmits the Load from the Lever Arm

the inside or gage corner of steel rails in certain territories. Shelling has been noticed particularly in rails laid since 1934 and is believed to be due or related to internal stresses being produced under wheel loads beyond the fatigue strength of the steel; it is the development of a series of small cracks which generally originate below the surface of the metal and progress outward and inward.

Although the cracks usually are discovered before actual failure occurs, the Rail Committee of the A. R. E. A., in its 1945 report, points out that shelling is more serious and widespread than previously was realized. While no solution yet has been found for the problem, the committee points to definite progress and through the co-operative efforts of N. & W. research comprising the study of rail steel composition, heat treatment, rail head contours, wheel and rail contacts and pressures, substantial progress has been made in solving a most irritating problem.

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All bus and trolley surface transportation would feed into the rapid transit lines, with free transfers, so that a completely co-ordinated local passenger transportation monopoly would be established, under a state-owned "authority." Most existing electrified transit lines are owned by the Boston Elevated Railway which is state-operated but, in part, privately owned. The new plan would complete the state's acquisition of the Boston Elevated, in order to eliminate federal income taxes which were estimated to have been \$600,000 on the property in 1944.

The commission estimates that the cost, exclusive of new equipment, of all the construction necessary to establish these rapid transit lines (i.e., construction consisting largely of electrification and building of short connecting tracks) would be \$33,600,000, "or a cost comparable to one multiple-deck or 'super' highway through Boston." "A rapid transit line produces direct revenue, a highway does not," the report observes.

"Estimates of costs to construct and operate the rapid transit extensions proposed in this report," it is stated, "do not include any item of cost for the acquisition of the railroad rights of way or for the use thereof. Commutation or short haul service by the railroads is a costly and generally unprofitable operation. We believe railroad management will admit that to be the fact. . . . The construction and operation of a unified rapid transit system would relieve the railroads of an unprofitable operation, so we regard it as only fair that they should permit the use of their rights of way at nominal cost to the public. The proposals herein contained provide for the continuation of freight service and also for the continuation of long distance passenger service by the railroads. The

estimates include such costs as relocation of tracks and facilities, additional trackage, overpasses, signal equipment and other items required for rapid transit operation over the rights of way of the railroads."

The commission estimates that the system it proposes would show an increasing rather than a decreasing public patronage and that it would earn an annual profit of approximately \$700,000 above operating costs and interest on the investment at zone-type fares ranging upward to a maximum of 20 cents. Transfers would be issued so one fare would take a passenger to destination, regardless of his use of two or more vehicles in the course of his journey.

On the Old Colony R. R. beyond Braintree, where the plan does not contemplate operating rapid transit trains, it is assumed that buses to connect with rapid transit trains will be substituted for existing trains; thus the complete discontinuance of passenger service on the Old Colony R. R. is provided for. Feeder bus service beyond some of the other rapid transit terminals is also called for. The diversion of suburban trains from South Station, Boston, into the transit tunnels would free a number of tracks in that station and the commission suggests that the space thus released be converted into a terminal for bus and air lines.

To provide for movement by highway of the passengers the proposed transit lines would accommodate, the commission estimates that the cost of highway construction would be \$169,000,000, or nearly five times the cost of the rapid transit proposals. As a precedent for unified passenger transportation in a metropolitan area, the commission cites the experience of the London Passenger Transit Board. The state "authority" to operate these transit properties would be relieved of local taxes on all property actually used for transit purposes but would pay such taxes on real estate devoted incidentally to other purposes.

It is also recommended that "no person employed by any agency taken into the system . . . be removed, lowered in rank or compensation or suspended except for just cause"—and pension rights would be similarly protected.

Research Brings

(Continued from page 796)

soda ash to remove the sulphates or permanent hardness.

The expansion and development of water treating plants at larger terminals proved so successful in promoting the efficiency of locomotive operation that 49 wayside plants have been placed in service since 1929 to supplement the 20 large softening plants. Following the introduction of wayside systems the use of pulverized sodium aluminate also was adopted in the larger softening plants in addition to lime and soda ash, further to reduce the hardness compounds in the water. Nine different chemical com-

pounds now are being used in clarification, softening and the prevention of foaming.

Research has shown that water supplies having entirely different mineral characteristics require different treatments for good results. It is just as necessary to have different types of pumping equipment or chemical proportioners to apply these various forms of treatment; and careful supervision of the equipment and scientific control of the treatment are necessary both by the local attendants and the supervisors. The N. & W. water service supervisors are charged with the careful inspection of treating equipment at each plant to determine its operating efficiency as well as the proper proportioning of the treatment to the water, and making complete field analyses of both the raw and treated waters to make sure that the correct quantity of treatment is being applied.

Changes in the chemical content of water frequently occur that necessitate altering treatment. Insufficient treatment fails to accomplish the desired results and overtreatment not only is wasteful and expensive but, also in the case of many treating agents, an excessive amount actually may cause foaming and thereby defeat the purpose of water treatment. The three water service supervisors in the last year have made more than 650 visits to water treating plants and have made more than 300 adjustments to the equipment or to the flow of the chemicals used.

Boiler Foaming Eliminated

Not only have research and proper water treatment eliminated fully 90 per cent of all foaming in N. & W. locomotives, but properly treated water also has been an important factor in stepping up operating efficiency. The colloidal type of water treatment to prevent foaming, now in use for almost a full year, has almost eliminated "blow-downs" in many terminals. As a result engines are turned, serviced and ready to start back on return trips in less than two hours. Substantial savings have resulted in coal formerly used for "blow-down" purposes since approximately 17½ lb. of coal are required to bring about a reduction of one grain in the dissolved solid content of locomotive boiler water by "blowing down." Moreover, the attendant noise and disruption of enginehouse forces, where "blow-down" ordinarily comprised a regular part of the routine prior to dispatching locomotives, also have been eliminated.

Foaming usually is caused by the presence of a high concentration of dissolved solids in boilers, and strict schedules for blowing out the boilers both on the road and at terminals are necessary. N. & W. water service supervisors keep a close check on the amount of dissolved solids in the boiler waters by the use of small electrically operated instruments which employ an electric resistance principle. The quantity of dissolved mineral and organic solids can be deter-

mined accurately within five minutes by the use of such instruments and one is now located at each important N. & W. locomotive terminal. The use of these instruments by competent operators for checking incoming and outgoing engines has been so successful that delays from foaming now are rare.

The Ingenious Foam Meter

Large quantities of leaves and decaying vegetable matter in boiler waters often cause considerable foaming that is not due to excessive dissolved solids. This condition is not yet fully understood or controlled but an ingenious device known as a foam meter has been developed by N. & W. research and has proven highly satisfactory in determining underlying causes. The equipment comprises a tall glass tube and an electric heating element which, when used in conjunction with synthetic boiler waters prepared in the laboratory, has established that certain types of suspended matter depress foaming while others accelerate it. All types of organic matter of a sewage origin greatly accelerate foaming and a predominantly organic compound has been developed which when added directly to the water in the tender eliminates the foaming.

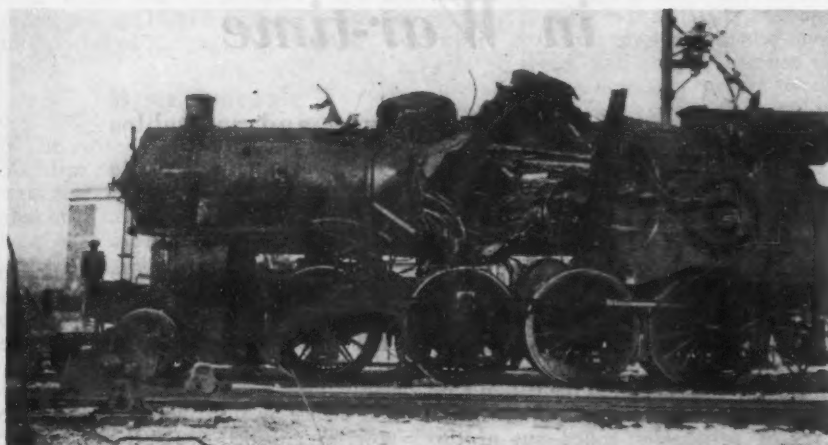
Fluorescent Analysis

Fluorescent equipment is used for the analysis of paints, varnishes, oils and greases, as well as "black" light for investigating freight claims where edible commodities such as flour and sugar have been damaged in transit. Ultra violet light is used in fluorescent analysis based on the absorption of ultra violet rays which again are reflected or irradiated and produce a characteristic color quite distinct from that given in natural light.

Fluorescent analysis in many instances replaces, with speed and simplicity, many of the long, complicated gravimetric and volumetric methods. The depth of penetration of transparent types of wood preservatives is readily determined by ultra violet light. In conjunction with freight claim work fluorescent analysis quickly determines the substance with which the edible commodity has been contaminated, the depth to which it has penetrated containers, the extent of the damage and whether appropriate salvage methods may be employed.

CAPTURED GERMAN LOCOMOTIVE.—Four army railroaders with the 755th Railway Shop Battalion repaired and returned to operation the first captured German locomotive on the Belgian front. Described by T/Sgt. Raymond S. Bertleson, of Los Angeles, Calif., as "a 1941 'giant' with feed-water heater, roller bearing tank truck, large cab equipped with cross-compound air-pump and water pump," the locomotive and tender had been strafed and hit in 54 places. Holes were repaired, boiler washed, pipes welded and air pump and water pump repaired.

War Destruction on Italian Railways



At Battipaglia, a Locomotive Boiler Is Opened Up by Shellfire



Nazi Mines Caused This Bridge at Buoncouvento to Crash with Two Locomotives—One Here Shown

[From a group of recent photographs sent to Railroadians of America by Capt. A. Sheldon Pennoyer, Corps of Engineers Allied Commission.]



A Blasted Passenger Car at Foggia Breaks Another in Two



Car Repair Shop Wreckage at Florence



Freight Yard Debris at Battipaglia

Perishables Are Important in War-time

**Missouri Pacific hauls fruits and vegetables
in quantity from Texas to northern markets**

THE Lower Rio Grande Valley, in the extreme southeastern corner of Texas, is only about 70 miles long from east to west and some 40 miles wide at its widest part, yet it plays a disproportionate role in supplying the nation with fruits and vegetables. More than 600 cars of perishables rolled out of this small triangular area on one day recently. The Missouri Pacific alone handled 40,504 cars of fruits and vegetables out of this district in the last shipping season. The area is also served by the Southern Pacific, but, in this article, only the Missouri Pacific operations are described.

No less than 36 varieties of fruits and vegetables are produced in the Valley in quantities. Those which were handled in amounts of more than 1,000 cars by the M. P. in the 1943-1944 season are listed as follows:

Grapefruit	11,528	cars
Mixed vegetables	7,595	"
Tomatoes	6,837	"
Mixed citrus fruits	2,873	"
Cabbage	2,697	"
Carrots	1,966	"
Oranges	1,735	"
Potatoes	1,210	"

There are more than 5 million grapefruit trees and nearly 2½ million orange trees in the valley now, as compared with a total of only 3 million citrus trees 15 years ago. The shipping season for both fruits and vegetables begins about October 1 each year and ends on July 1. During the 1943-44 season the M. P. handled 6,577 more cars of perishables than in the previous season. This is the result not only of increased production to feed a nation at war but also came about because of the failure of railway competitors to measure up to the pressure of war-time needs. Coastwise ships, for example, formerly handled a certain percentage of the crop, but passed out of the picture as soon as war began. Highway trucks formerly handled about 65 per cent of the annual citrus crop—they will handle less than 15 per cent of this year's harvest.

Canned Goods Tonnage

The record month for the M. P. in 1944 was February, when 6,535 cars of perishables were handled. In February this year, despite the temporary car shortages brought about through delays in the return of empties from the snow-bound East, 6,406 cars were handled, which included a record day when 589 cars were moved.

In addition to the large volume of fresh fruits and vegetables from the valley, there is also a large tonnage of canned goods from the 44 canning factories located there. Much of this formerly moved by truck to Brownsville and thence by ship, but the railways are now being called upon to handle practically all of this tonnage.

Serving the Valley

Small as the Valley is, there are 39 cities and towns, served by the M. P. from which fruits and vegetables were moved during the 1944 season. Most of these towns have more than one loading shed or packing plant, so that the points of origin are numerous and widely diffused. As many as 4,000 cars are shipped from some of these points while others load only a few cars. The situation is further complicated since, by reason of the diversity of the products grown in different places, the amount of

service required at any one point may vary widely from month to month.

To serve the area, the M. P. has a checkerboard of lines as shown on the map. This mileage not only serves for the outbound movement of perishables but also for the inbound movement of supplies and materials necessary to such an essentially agricultural area. Some petroleum is also produced on the Santa Monica branch out of Raymondville, while, in addition to homegrown perishables, an occasional shipload of bananas from southern Mexico arrives at the port of Brownsville. There is also a small interchange with the National of Mexico over the international bridge at Brownsville. To handle the general business other than perishables, through trains are operated between the division point far to the north at Kingsville and the Valley centers of Mission on the west and Brownsville on the east. Local trains are also operated daily or tri-weekly on many of the branches.

For the handling of perishables, however, special fruit switching runs have been established. Solid trainloads of empty refrigerator cars are operated from the North into the centers from which these fruit runs radiate.

The switch engines from such points then distribute the empties to the loading sheds and packing plants and gather up the loads from such localities later.

Harlingen is the principal concentration point and the trainmaster in charge of Valley operations is located there. He is assisted in determining the future



Late Tomatoes Being Packed While the Cotton Crop Has Already Started to Move



The Semi-Tropical "Valley" Produces a Wide Variety of Fruits and Vegetables

needs by an agricultural expert, who tours the Valley gathering reports from agents and making his own observations as to the acreage planted and probable refrigerator car needs. Through long practice, accurate forecasts are made each season, which are revised, when necessary, because of unusual climatic conditions.

Switch engines on the lines east of Harlingen are located at San Benito and Brownsville. Except at Raymondville, fruit switching runs throughout the Valley are limited to 20 miles in any direction from the home terminal. In the case of the San Benito switchers, for example, this would permit runs to

Brownsville or Harlingen, if necessary, and the switchers from this point serve the Rio Hondo branch, 9 miles; the Port Isabel line as far as Abney, 20 miles; and the line along the Rio Grande as far west as Rangerville, 15 miles.

Basic Schedule

The switchers at Mercedes, Weslaco, McAllen and Mission on the main east-west line through the Valley are operated on a similar basis. They are mostly kept busy at the heavy loading points along this main line, but do some branch line work as well, particularly those at Mission, which operate in four directions from that terminal. In the northern section of the Valley, switchers from Raymondville also operate in four directions when necessary, serving the main line and several branches.

Closing hours for making the basic schedule out of Harlingen at 5:30 a.m. range from 7 p.m. from out-of-the-way points on distant branches to the early morning hours at places near Harlingen. The most important closing hours are as follows:

Loading Station	Closing Hour	Distance from Harlingen
Mission	11:00 p.m.	40.0
McAllen	11:15 p.m.	34.2
Pharr	11:30 p.m.	31.0
Weslaco	12:01 a.m.	18.8
Mercedes	12:15 a.m.	13.9
Brownsville	11:00 p.m.	25.6
Russelltown	11:30 p.m.	11.5
San Benito	12:01 a.m.	6.6

Thus, the loaded refrigerator cars are collected at Harlingen and made up into trains of 85 to 100 cars each for movement north. Since the line to Houston parallels the sea along a flat coastal plain and the maximum grade is not more than 0.2 per cent, heavier trains could be handled except for the prevailing high winds during the shipping season, which blow in from the Gulf with gale force and perceptibly slow down trains, one of the few places in the country where this is habitually the case. If a sufficient number of cars is

available at Raymondville, solid trains are run north from there; otherwise, trains are run from Harlingen which fill out to tonnage at Raymondville. No attempt is made to pre-classify cars anywhere in the Valley, first, in the interests of speed, and second, because the prevalence of diversion orders would largely render such classification useless. The cars are built up into trains for movement north in the yards at Houston, after any diversion orders have been received.

The basic schedule calls for 5:30 a.m. departure from Harlingen and arrival at Houston at 11:30 p.m. the same day. The distance of 346 miles is traversed in 18 hours. Even when as many as seven solid trains of perishables per day were operated out of Harlingen, the first one to leave was dispatched sufficiently early so that the last one could still make this schedule.

Man-Power

Even though the Valley cotton crop supplies a sizable amount of tonnage in summer months, the end of the perishable movement has always meant a sharp drop in the number of men required. The need for men for only about nine months per year and the necessity for large numbers of men for only about five of those nine months presented a man-power problem even in peace-time. Actually, though, while the war intensifies this problem, of course, the difficulties did not increase relatively as greatly as they have elsewhere. For one thing, although there are air-fields and other military installations, there are no war plants anywhere near the Valley, so that "home-grown" employees have not been enticed away in large numbers. Another reason is that, since the Valley is as far south as the tip of southern Florida, the winter climate is pleasant and balmy as a rule and many employees particularly older men, on the Missouri Pacific itself and other railways, still take leaves of absence from their jobs in the North and come to work in the Valley for the winter season.

The Missouri Pacific Has a Network of Lines Serving the "Valley"



Railroads-in-War News

Would Lift Ban on Church Conventions

New York congressman reveals "stormy session" between clergy and O.D.T. chief

Representative Edwin Arthur Hall, Republican of New York, has introduced House Concurrent Resolution 51 to express "the desire and the will of the Congress" that conventions and gatherings "of a religious nature" should be exempted from the War Committee on Conventions' ban on travel to meetings of more than 50 persons. The resolution calls the ban an "order of the director of the Office of Defense Transportation."

O. D. T. Director J. Monroe Johnson is chairman of the War Committee on Conventions, and Mr. Hall introduced his resolution after he had received from "a Johnson City clergyman" a letter which quoted from another letter wherein the recording secretary of the American Council of Christian Churches had made a report on a conference with Colonel Johnson. As quoted in the Johnson City clergyman's letter, the recording secretary gave this account of the conference:

"We called on the director of O. D. T. and pleaded with him not to attempt to

restrict religion, and to exempt the church from such restrictions. We had quite a stormy session because we stood our ground. We finally told him that if he insisted or attempted to curb the church, we would resist and hold our meetings anyway. You can imagine how he reacted. He hit the ceiling."

The recording secretary was also quoted as having said that O. D. T. "does not want its orders discussed in Congress. They realize that once congressmen are aware as to what is involved that Congress will compel them to rescind such un-American orders."

Mo. P. Adds Troop Sleepers to "Sunshine Special"

Troop sleepers, for the accommodations of service men traveling on government orders, are now being operated as regular equipment between St. Louis, Mo., and El Paso, Tex., on the "Sunshine Special" of the Missouri Pacific-Texas & Pacific. First placed in service for a 60-day trial period in January, the cars are now permanently assigned. Following the success of this operation, troop sleepers have recently been placed in service between Kansas City, Mo., and Little Rock, Ark., on Missouri Pacific trains 117 and 124. Reservations and space assignments in the three tier, 42-berth cars are handled by government reservation bureaus, space in the cars not being available for civilian passengers.

* * *



U. S. Signal Corps Photo

Though Restricted by Space, Army Engineers Soon Found an "Out" When They Came Upon a Destroyed Railway Tunnel Leading into the Station at Cherbourg, France—They Brought in a Small Caterpillar Bulldozer to Clear Away the Debris

"Not Satisfactory," Wheeler Tells Pelley

A.A.R. officers' report on box car handling displeases western senators

Vigorously emphasized statements that the railroads' explanations of the continued shortage of box cars available for grain loading in the principal grain-growing states "have not been satisfactory," and do not constitute a "convincing answer" to the charge of discrimination against this region were hurled at John J. Pelley, president of the Association of American Railroads, and Warren C. Kendall, chairman of the A. A. R. Car Service Division, by Senators Wheeler, Democrat of Montana, and Reed, Republican of Kansas, in the course of hearings this week before the Senate committee on interstate commerce.

Wheeler to "Raise Cain"—These expressions of senatorial displeasure were accompanied by a warning from the first-named that he was "going to raise Cain" if the railroads did not put a sufficient supply of cars in the West this year to handle the forthcoming crop, and by Senator Reed's threat to offer legislation to correct the situation if the railroads continue to take the position with respect to the grain car shortage that they now take.

Mr. Pelley countered Senator Wheeler's rebuke with the observation that "it takes more than a statement" to get empty cars into the grain loading territory. He wanted to know if the railroads had made any progress by appearing at the investigation (earlier sessions of which were reported in *Railway Age* of April 21, page 718, and April 28, page 757). The A. A. R. officers who had come before the committee, including himself, had told the committee why there were car shortages and how they were being overcome, he said, but "you don't listen to what we say." He then asked the senator if the railroads were to blame for the war, or for the storms that tied up the eastern roads last winter.

A. A. R. Didn't Make It Snow—Senator Wheeler responded to this with the remark that "somebody" is to blame for the lack of cars to move the grain. To Mr. Pelley's: "Who is it?" he said that the people managing the distribution of cars were partly at fault. He appreciated the extraordinary conditions, resulting from the war traffic and the unprecedented storms in the Northeastern states, he declared, as well as the equipment and manpower difficulties faced by the railroads and the Office of Defense Transportation and other agencies concerned with the matter.

"Then why blame us?" Mr. Pelley asked, and he added that he did not "like the way things were going." "We have told you why you haven't had cars," he said, "and you don't believe us."

Closing this phase of the argument, which occurred as the May 1 session of the hearing was ending, the Montana senator replied that he did believe the railroads were now making an effort to take care of the West's need for box cars. Nevertheless, he added, with assists from Senator Reed, last year's crop still had not been cleared out of the way, elevators were still blocked, mills were unable to meet their contracts for lack of grain, production of flour was being so affected that necessity for rationing that commodity was becoming a possibility—in short, the West was still "tied up." And then he repeated his opinion that the railroads' handling of the situation was "not satisfactory."

Few Senators to Listen—The hearings were resumed April 30 after the presentation of the grain interests' witnesses had been concluded on April 20. Although a dozen or more senators, chiefly from western states, had attended the earlier sessions at which these witnesses appeared, only Senators Reed and Tunnell (Democrat of Delaware) were present throughout the first two days devoted to the testimony of the A. A. R. officers who undertook to explain to the committee why the shortages had developed and what they had done to overcome them. Senator Wheeler, chairman of the committee, was present at the short session on April 30, and for a portion of the afternoon session on May 1, while one or two other members of the committee appeared briefly during the proceedings. A similar situation prevailed on May 2, when Senators Reed and Wheeler were present throughout the session.

The April 30 meeting opened with the further appearance of Walter R. Scott, secretary of the Board of Trade of Kansas City, Mo., who submitted additional figures as to western car shortages and excess of box cars on lines above ownership of certain eastern roads, particularly the New Haven and Boston & Maine. Referring to his earlier statement that the "backlog" of grain loadings in the West (including grain products) was around 400,000 cars (noted in *Railway Age* of April 28, page 758) he modified that figure, as a result of further computations and comparisons, to make it nearly 500,000 loadings, and thus registered his further disagreement with the forecast of O. D. T. Director J. Monroe Johnson that grain loadings by July 1 this year would be 60,000 cars ahead of the same time last year.

Wants C. S. Rules Obeyed—Mr. Scott went on to say that the car service rules require railroads to return unloaded cars to the owning road, under load if one is available in that direction, but otherwise empty. Late in 1916, he said, the Interstate Commerce Commission instituted an investigation of a somewhat comparable shortage, and as a result vigorously directed the railroads to comply with their rules for the return of cars to owning lines. Subsequently, the commission secured absolute power with respect to the movement of cars. If the railroads are

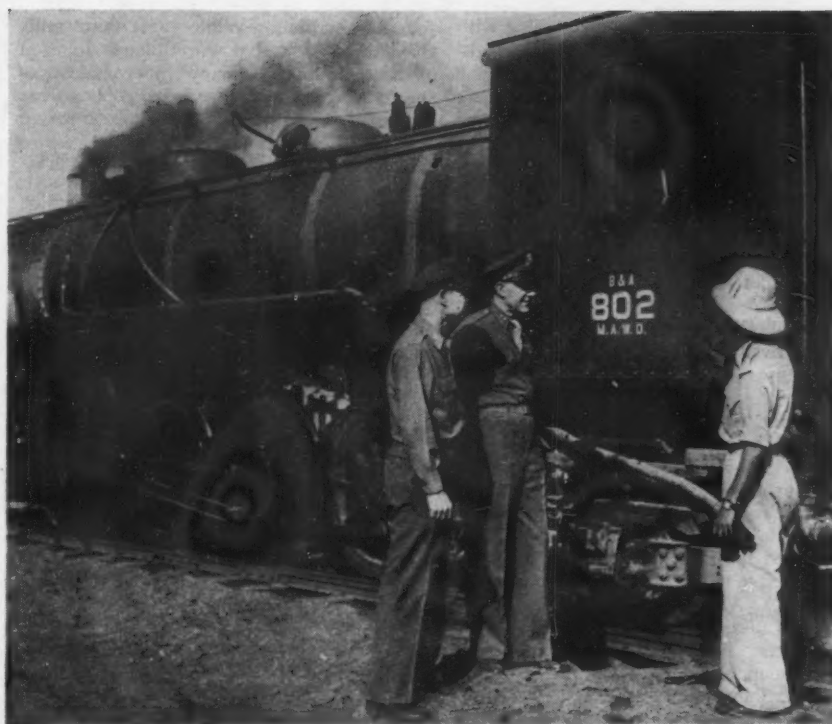


Photo by U. S. Army Signal Corps

Maj. Gen. W. E. R. Covell (center), Commanding General of the Services of Supply, China-Burma-India Theater of Operations, on Inspection Along the Army-Operated, Meter-Gage Bengal & Assam Railway. With the General Are Maj. F. H. Winget, of Bellefontaine, Ohio, Former New York Central Railroader, and a Native Employee

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not complying with the car service rules today, he declared, the commission has power to, and should, require compliance.

The first spokesman for the railroads before the committee was Mr. Pelley. While he registered his objection to some of the remarks about the A. A. R. that had gone into the record at previous sessions, the theme of his statement was that the railroads were "getting over a bad spell of sickness," and the West's car supply was steadily improving. There were four reasons for the western box car shortage, he explained: (1) The bad storms in the Northeast; (2) the shortage of men, particularly of crews to man yard engines and mechanics to repair equipment; (3) the heavy demand for box cars from all parts of the country; and (4) the declining supply of box cars available, there being 15,000 fewer now than in 1942.

With reference to the last-mentioned factor, the A. A. R. president said that a program is now under way to take some 15,000 to 18,000 box cars out of service, to set them aside for rebuilding when shop labor is available, since they are now in such poor condition that the overall car movement will be speeded up with these cars off the road.

Cars Hard to Get—The railroads had 50,000 cars on order, including 20,000 box cars, he explained, and these are being delivered at the rate of about 4,000 a month. The railroads placed these orders, he added, "under pressure" from him and Colonel Johnson, and when the War Production Board told the railroads they couldn't have the materials to build them

they went to the Army for relief. The Army appreciated the necessity of allowing the railroads what they needed to keep up the condition of their equipment, he observed, and provided the material out of its allotment.

Discussing the man-power situation, Mr. Pelley pointed out that the railroads had about 1,100,000 employees when the war began. They lost 300,000 to the armed forces and 100,000 to other industries, leaving them 700,000 experienced men, that is, one-half their present working force of 1,400,000, the other half being new employees taken on since the war began. These figures showed the railroads had not been waiting for somebody to help them meet the man-power situation, he observed. They had made "heroic efforts" to take care of themselves, even though the overall efficiency of their employees, due to the large number of new men, had not been of the highest standard.

Before giving this information, Mr. Pelley had called attention to a complaint of Mr. Scott, at an earlier session, that, so far as the Kansas City committee representing the grain interests had been advised, the A. A. R. had taken no action upon their protests about the lack of box cars in the West. On March 27 he wrote these people a letter outlining the situation much as it was set forth for the committee, Mr. Pelley explained, and he thought this showed the A. A. R. was responsive to the situation and had offered the western territory some encouragement.

Johnson Unfairly Rapped—Reverting to this subject later, Mr. Pelley declared

that the railroads were not quarrelling with the grain people, because they are the roads' customers and they want and expect to have their business always. Because this is so, he said, the railroads have made heroic efforts to take care of their need for cars this winter. Nonetheless, he said to Senator Reed, "you accuse us of being complacent." And if the Kansas City group realized how the O. D. T. had pressed the railroads to clear up the unbalanced distribution of cars it would not have criticized Colonel Johnson, he added.

Senator Reed then asked Mr. Pelley if he approved Colonel Johnson's letter to the Kansas City group, the subject of previous comment in the hearings, where the writer termed the grain group "presumptuous" for making certain proposals. The A. A. R. president replied that he did approve the letter—it only told the facts. It was all right for the grain group to tell the O. D. T. and the railroads of their need for cars, he declared, but when they "tried to tell us how to run the O. D. T. and the A. A. R. we took exception."

The Kansas senator countered with the observation that Mr. Pelley called the grain group, and particularly the O. D. T.-I. C. C. joint grain conservation committee, "fine people" but paid no attention to their suggestions. Were any of them presumptuous? he wanted to know. Mr. Pelley said one was—the suggestion that the roads put three western railroad men in charge of Eastern territory operations to clear up the congestion. Such a proposal not only was presumptuous, it was ridiculous, he asserted. Later Senator Reed remarked that the committee's investigation was undertaken chiefly as a result of the resentment caused in the West by Colonel Johnson's letter. Mr. Pelley replied to this by saying he was sorry to hear it, as he had thought the senators wanted to get at the bottom of the grain car supply situation.

No Intent to Harm the West—The A. A. R. has no objection to the investigation, and has been happy to co-operate, Mr. Pelley declared, but he did resent the senators' accusation of discrimination by the railroads, and specifically by the Car Service Division and its chairman, Mr. Kendall, against the West and in favor of the East. Such an accusation is equivalent to a charge of dishonesty, he declared, and that was the reason they were most resentful. Senator Wheeler exclaimed that no implication of dishonesty was meant, but that anything that was done, whether under pressure from the War Department or otherwise, to hold more than a fair proportion of box cars in the East amounted to discrimination against the West. Nevertheless, Mr. Pelley responded, the Car Service Division has tried to be fair to everybody, and "we resent the charge."

With reference to the possibility that "transportation difficulties" might lead to flour rationing, the O. D. T. issued a public statement May 1 denying Senator Reed's prediction of such action. The statement called attention to the introduction of a permit system for the movement of grain out of the West, effective May 1 under I. C. C. Service Order 304, and to the increase in the movement of wheat from

country stations. While some flour mills have been slowed down, Colonel Johnson indicated, so had many other industries been affected by the general box car shortage.

Light Loading into Grain Area—Another step designed to make more efficient use of box cars was modification of O. D. T. General Order No. 1, requiring full loading of merchandise cars, in order to make more cars available for grain movement and to reduce congestion in freight and transfer houses in the East. A special permit has been issued, effective April 25, permitting dispatch of merchandise cars with 5 ton loads, rather than the 10 tons required by the order, when such cars are destined to points in the grain-loading territory, or when they are handled direct to destination, by-passing regular transfer stations, provided these cars are moving in the direction of empty movement to the grain states.

A detailed accounting of the conditions that have affected the ability of the railroads to maintain the West's box car supply, and of the measures undertaken by the Car Service Division and other agencies to correct the unbalanced box car distribution since the opening of the current grain shipping season, and particularly since the winter's storms disrupted normal operations, was given the committee by C. H. Buford, vice-president of the A. A. R., Mr. Kendall, and Ralph E. Clark, manager of the C. S. D. closed car section. Their statements were presented on May 1 and 2, with I. C. C. and O. D. T. witnesses scheduled to follow them.

No Prevarication—Mr. Pelley had paved the way for these A. A. R. officers by pointing out that the western roads, in the period from February 19 through April 15, had received from their eastern connections 34,183 more box cars than they had delivered to those roads, and that the eastern roads had delivered 93 per cent of the box cars the C. S. D. had called for since the February 19 quotas went into effect. This was the answer, he said, to Senator Reed's charge that the A. A. R. had let box cars stay in the East on the "spurious foundation" that the East needs them. As to another accusation by the Kansas senator, that the A. A. R. and O. D. T. had given out "misinformation" about the real box car situation, Mr. Pelley declared that the grain interests' case had been made before the committee, and there was "not one iota of evidence" to substantiate that very serious assertion.

Mr. Pelley and the other A. A. R. officers were repeatedly pressed by Senator Reed for an explanation of what he called the "overnight" increase of 50 per cent in the number of empty cars which the eastern roads released to the western lines. Up to and including April 17, he said, such deliveries ran around the 1,425 quota set by the C. S. D., being 1,643 on that day. On April 18 they "jumped" to about 2,300, and had remained in that area since then. Mr. Pelley's explanations did not satisfy the senator, who accused the A. A. R. president of "dodging" the point, but the explanations put into the record were that the increase was the result of a number of

factors, such as the final release of cars that had been delayed by the storm blockade, the inclusion of deliveries by the south-eastern roads, a general improvement in operating conditions, effectiveness of the C. S. D. campaign to get cars to the West, and let-up of certain demands for cars, such as the grain movement from lower lake ports.

Did Complaint Move These Cars?—Reverting to this subject later, Senator Reed remarked that "it may be purely coincidental" that the 50 per cent increase in daily receipts of empty cars on western roads occurred as the Senate committee's investigation was getting under way. Again and again he and Senator Wheeler stressed the comparative positions of the Boston & Maine and New Haven in the East and the Great Northern in the West as to percentage of ownership of box cars on line, the figures being in excess of 200 per cent during the spring on the former roads and as low as 39.2 per cent on the latter. Calling attention to the fact that Mr. Pelley had been president of the New Haven, while Mr. Kendall had been superintendent of transportation of the Boston & Maine, the Montana senator remarked that "what we want down here is men off the western roads." The C. S. D. had taken "awfully good care" of the New Haven and B. & M., he observed, and he wished they would "take as good care" of the roads in the Northwest.

Mr. Buford's statement to the committee consisted of a general review of the wartime experiences of the railroads, particularly under the strain of the past winter's storms. He described some of the "advice" the A. A. R. had received, some of the suggestions that had been offered for relief through "master minds," embargoes, and the like, and the criticism that "inexperienced people" had made of the New Haven and B. & M. He put into the record the text of the car service agreement to which the railroads subscribed and under which the C. S. D. functions, and the text of Rule 19, outlining its duties.

Among the exhibits Mr. Buford presented to the committee was a chart showing by months, since January, 1940, the extent of the excess of box cars on line over ownership on eastern and western roads. In seven months of 1943 and eight months of 1944, this chart indicated, there was an excess of eastern-owned box cars on western roads. Also, there was an excess of western-owned cars on eastern roads in the first months of every year, just as there was in 1945, though the disparity was greater this year, due to the storms and other unusual conditions.

Kendall Gives Detailed Review—Mr. Kendall's comprehensive statement, with accompanying exhibits, presented the picture in greater detail, giving his answer specifically to many of the points that had been raised in the testimony of spokesmen for the grain trade and the western senators in earlier sessions of the hearing. In sequence he discussed the traffic dislocations caused by the blizzards in the Northeast; the C. S. D. embargoes applied as a result of this congestion, and their immediate and overall effect; the loading of grain

and products in this and previous seasons; the increasing demand of the Army for box cars for war traffic; the tremendous growth in the volume of export traffic, despite which the ports have been kept fluid; the provision of box cars for the winter wheat crop, the effect of which was to a considerable extent offset by the use of these cars by the western roads and shippers for other freight, a matter not within C. S. D. control; the relationship of box car ownership to total loadings on individual roads; the comparative excessive use of eastern-owned open top cars by western roads, reversing the box car situation of which the western senators had been complaining; the extent of circuitous routing, the difficulty of eliminating it, and some of its causes, such as government use of land-grant routes (a comment to which Senator Wheeler took exception); the box car supply of the two New England roads repeatedly criticised in the hearings; the formula used by the A. A. R. for determining proper car ownership figures for individual roads, depending on whether they are originating, bridge, or terminating lines, and the application of this formula to the New Haven and B. & M.; and, finally, a brief review of the dramatic wartime performance of the railroads as compared with 1929, their pre-war high traffic year.

Mr. Clark discussed the grain movement and the car supply available for it in still greater detail. He gave further information about measures adopted by the C. S. D. to get box cars back to the western roads, and gave detailed figures as to the use of the principal western roads had made of these cars when they received them. He reviewed expedients adopted by the western roads to handle the grain, such as their use of open top, stock and refrigerator cars, and in refutation of Senator Wheeler's repeated assertions that there were no box car shortages in the East because the committee had not heard of any, he said:

East Is Short, Too—"The box car supply in Eastern territory has not been adequate any time the past four months, and complaints by shippers and governmental agencies have been more numerous in Eastern territory than in Western territory. We have had innumerable letters, telegrams and telephone calls from shippers throughout the Eastern and Southern regions, as well as complaints from senators and congressmen from the states of Michigan, Ohio, Indiana, Illinois, New York, Georgia, Louisiana and others, as well as the War Production Board, War Food Administration, Office of Price Administration and Army regarding the box car supply for the loading of chemicals, truck tires, steel, tin plate, sugar, soda ash, seeds, fertilizer, salt for chemical plants and the packing house industry, cement and grain and grain products for export by the Army, pulp, paper, shells, food containers and numerous other commodities directly connected with the war effort.

"In almost every instance the interested government agency and the shippers importuned us to either reduce the westbound movement of empty box cars in order to take care of these requirements, or at least stop off enough box cars to protect their requirements for loading to inter-

mediate territory or the Central West," Mr. Clark continued. "Many industries essential to the war effort in the Eastern region were frequently closed or forced to reduce their operations because of an inadequate box car supply. Industries such as chemical plants, steel, tin plate, flour, lumber, and cement mills, salt mines, silica sand plants, airplane and automotive parts manufacturers throughout the East and Southeast were not provided sufficient box cars, with the result that production suffered.

"We have withstood these complaints and criticisms and have not relaxed in our efforts for a single moment to provide the best possible car supply in Western territory."

T. & N. O. and B. of R. T. Cited in Discrimination Complaint

Complaints against the Texas & New Orleans and the Brotherhood of Railroad Trainmen, involving alleged discrimination against negroes, were scheduled to be considered on May 4 at a Houston, Tex., public hearing announced on May 1 by the Committee on Fair Employment Practice.

"According to the complaints," the announcement said, "qualified and needed negro men have been and are being consistently refused employment as or upgrading to jobs as switchmen by the company at its terminal in Houston. The complaints against the union allege that it is a party with the company to an agreement that prohibits the employment of negro men as switchmen at the Houston terminal, solely because of race or color."

720th Op. Bn. Supplies Crew for First Train Over Rhine

It was the Chicago & Northwestern-sponsored 720th railway operating battalion, commanded by Lt. Col. Conrad J. Freeman, of Chicago, a former C. & N. W. employee, which supplied the crew for the first train to cross the Rhine at Wesel, Germany, on April 9. The Diesel-drawn train consisted of 32 cars, with a second engine at the rear.

Engineer of the lead locomotive was Sgt. Nicholas Lusek, of Youngstown, Ohio, with former Southern brakeman, Cpl. Neal R. White, of Biltmore, N. C., acting as fireman. Another Southern railroader, Sgt. Edwin R. Gaston, of Belmont, N. C., served as conductor, and Pfc. Curtis H. Vincent, from the Illinois Central, at Central City, Ky., was one of the brakemen.

In the cab of the pusher engine at the rear of the train were Sgt. Russell E. Smith, of Fort Madison, Ia., a former Santa Fe employee, and Cpl. Donald L. Woodward, of Charleston, Ill., from the I. C.

Cuts \$3,300,000 from Proposed O. D. T. Appropriation

President Truman this week submitted to Congress a revised budget estimate cutting to \$7,700,000 the \$11,000,000 which the late President Roosevelt had previously recommended as an appropriation for the Office of Defense Transportation for the fiscal year ending June 30, 1946. The President's message said the \$3,300,000 cut was being recommended because of anticipated

improvement in the transportation situation by December 31.

For the current fiscal year, O.D.T. has received appropriations totaling \$17,000,000 but that amount includes some \$2,500,000 for the payment of overtime compensation to employees under the act of May 7, 1943, which expires next June 30. There will perhaps be a supplemental request for additional fiscal 1946 funds if new legislation continuing the overtime is enacted.

740th Ry. Op. Bn. Issues Time Table in Germany

Army Transportation Corps Headquarters in Europe has revealed that the Chesapeake & Ohio-sponsored 740th railway operating battalion was the first M. R. S. organization to establish headquarters in Germany.

The battalion, under the command of Lt. Col. Samuel H. Pulliam, of Fort Thomas, Ky., entered Aachen in early March, and now carries out its operations east of Aachen towards the Rhine and west to Belgium through five subdivisions. For this territory the outfit has published a time table, which lists track and yard facilities, special instructions, speed limitations of trains over various portions of track, and general information about restrictions governing the territory.

Cut Varieties of Asphalt to Speed Tank Cars

To speed up movements of tank cars, the Petroleum Administration for War has directed refiners to manufacture only 22 grades of asphalt and road oils instead of the 55 to 60 different grades that are usually made. Action was taken in a formal order (Petroleum Directive No. 80), which directs refiners to manufacture only 8 specified grades of paving asphalt, 9 grades of "cutback" asphalt, and 5 grades of slow-curing road oil. The directive was effective May 1.

By limiting the number of grades of asphalt that are used, it will be possible to increase the efficiency of tank car operations, it was explained. Specifically, more tank cars can be filled at the loading racks if a train of cars is moved through the same rack, as against the previous practice of moving cars from one rack to another for the blending of a special grade of asphalt. The reduction of grades, which indirectly eliminates blending, will also speed up operations by requiring less switching of tank cars in the refining and terminal yards.

M. R. S. Promotions

Chief of the passenger branch of the Transportation Corps' Movements division, and formerly a traveling agent for the New York Central, Captain George A. Nuffer, of Syracuse, N. Y., recently was promoted to the rank of major, T. C. headquarters in Paris has announced. A second promotion is that of Edward J. Gentsch, formerly of the purchasing department of the Pennsylvania, in Philadelphia, who "for outstanding performance of duty as supply officer of the 724th railway operating battalion in France" was advanced from first lieutenant to captain.

As passenger chief of the Movements di-

vision, Major Nuffer directs all hospital and passenger train operation on the Continent. Recently, five "furlough specials," carrying battle veterans to vacation areas, were added to his jurisdiction, and the "most popular" of these trains, it has developed, is the 1,000-seat "Riviera Limited" which runs from Aachen, Germany, to Nice, France.

As supply officer of the P. R. R.-sponsored 724th, Captain Gentsch's jurisdiction over supplies covers 640 track-miles of single and double track operated by his battalion in northern and northwestern France.

Maintenance Company of 716th Builds Own Home on Wheels

The equipment maintenance company of the Southern Pacific-sponsored 716th railway operating battalion, whose job it has been to service and maintain both U. S. and captured locomotives in France, now moves about in a 33-car train provided with living quarters, mess hall, orderly room, workshop and barber accommodations.

Converted from captured box cars, the men rigged up the bunk cars on their own time, putting in clothes racks, folding writing desks and small conveniences after their regular 12-hr. work shift had been completed. Beds for the 14 bunk cars were salvaged from former German billets. Hot water is available in each bunk car. The mess hall has painted benches and tables covered with colored cloth, and the kitchen car is fitted with regulation equipment. There is a supply car, an officer's car, paint shop, coal car and tanker for carrying fresh water.

The three-car mobile workshop, equipped for all types of railroad repair work, includes several lathes, drill presses and screw machines, plus a blacksmith shop.

Stoddard Follows Gray as 1st M. R. S. General Manager

Headquarters, European Theater of Operations, has announced that Col. Arthur E. Stoddard, former superintendent of the Union Pacific at Cheyenne, Wyo., has been appointed general manager of the First

Military Railway Service in France, succeeding Brig. Gen. Carl R. Gray, Jr., whose command of the newly-formed General Headquarters, with supervision over both the 1st and 2nd M. R. S., was noted in the *Railway Age* of March 10, page 459.

Colonel Stoddard moves into his new post after serving with the Supreme Headquarters American Expeditionary Force in England, as assistant director general of the G-4 (supply) division, where he gave particular attention to railway matters.

A veteran of World War I when he served as radio operator on transport ships, Colonel Stoddard was called into military service in 1942. He was sent to Iran in advance of the 702nd railway grand division to make a study of the railroads of that country, with a view to increasing their tonnage. He is said to have "achieved an admirable record by far exceeding the tonnage of the Iranian railroad officials and his Russian and British colleagues."

Report Heavier L.C.L. Loadings

The average loading of railroad merchandise freight per car was heavier in February than in any preceding month for nearly two years, according to the Office of Defense Transportation. The increased loading made more box cars available for hauling grain or other bulk commodities and helped to ease the car shortage in the grain belt, it pointed out.

Figures for February, the latest month reported, show, for Class I roads, a total of 8,206,273,821 lb. of merchandise moved, as compared with 8,266,296,216 lb. in February, 1944; and 421,219 merchandise cars loaded as compared with 441,665 in February, 1944. The 20,446 fewer cars used for merchandise loadings were made available for such purposes as the movement of grain, the O. D. T. explained.

While the total amount of merchandise decreased, the average weight carried per car in February, 1945, was 19,482 lb., as compared with 17,716 in February, 1944. The February, 1945, average was the highest attained in any month since April, 1943, and showed considerable improvement over the preceding months—18,503 lb. per car in January and 17,914 in December, 1944.

Materials and Prices

The following is a digest of orders and notices that have been issued by the War Production Board and the Office of Price Administration since April 21, and which are of interest to railways:

Freon-12 and Freon-22—All controls on the production and distribution of Freon-12 and Freon-22, the refrigerants used in air conditioning and refrigerating systems, were removed by the revocation of conservation orders M-28 and M-28A. W. P. B. officials warned dealers, distributors and owners of air conditioning and refrigerating systems that they should do everything in their power to assure the prompt return of empty cylinders. If such containers are not returned speedily, W. P. B. said, there is a possibility that a shortage may develop that will seriously affect shipments.

Lacquer Solvents—Allocations of lacquer solvents for the month of May will be drastically reduced, eliminating all nonessential civilian uses. It is expected that solvents will remain in short supply during the second and third quarters of 1945, W. P. B. said. Butyl alcohol and butyl acetate have become tighter in sup-

ply, as a result of a recent shift of military programs requiring increased quantities of butyl derivatives. In view of increased military demands for ethyl alcohol and acetic acid, May allocations of ethyl acetate will be partially reduced, W. P. B. said.

Metal Signs—Limitation Order L-29, as amended February 15, governing the use of materials in production of metal signs, was revoked but other controls that may affect the acquisition and use of materials for sign production remain in effect. Under Order M-126, use of iron and steel to make sign hanger frames and sign posts still is prohibited except as may be permitted under "spot" authorizations.

Power Boiler Parts—General conservation order L-299, governing the design of pressure parts for power boilers, has been revoked. Order L-299 was issued July 1, 1943, and applied to manufacture of all power boilers other than locomotive and marine. Specifications in the order originally were based upon proposals then being considered by the American Society of Mechanical Engineers for adoption as an alternate boiler construction code. The L-299 specifications

have since been adopted by the A. S. M. E. as a standard alternate construction and it is indicated that these specifications will continue to be generally accepted, W. P. B. said.

Sprinkler Heads—Limitation Order L-39-A, issued January 13, to place shipments of sprinkler heads on a quota basis, has been revoked. Under the order, each manufacturer was permitted to ship each year no more than 78 per cent as many sprinkler heads as he shipped during 1941. Revocation of L-39-A eliminates this quota restriction, as well as the inventory and other restrictions of the order. Production will depend upon the extent to which materials become available, W. P. B. said.

Scarce Metals—Schedules Nos. 1, 2 and 5 of General Conservation Order L-154 have been revoked. Order L-154, issued June 16, 1942, is the basic regulation under which specifications designed to conserve scarce metals have been issued from time to time covering production of various types of utility equipment. Schedule No. 1, last revised as of June 15, 1944, covers water meters; Schedule No. 2, last amended February 21, 1944, applies to steam surface condensers; and Schedule No. 5, as revised on April 29, 1944, affects high voltage insulators. The action revoking L-154, leaves outstanding only Schedule 4, covering switchgear.

West Coast Lumber—Sawmills in Oregon and Washington west of the crest of the Cascades must manufacture at least 40 per cent of their monthly production of Douglas fir, white fir and West Coast hemlock into one-inch boards, and at least 25 per cent of their monthly production of these species into two-inch dimension, according to Direction 1A to L-335. Mills are not cutting sufficient quantities to meet urgent military requirements. In many instances the required increase in production of boards and dimensions will make it necessary for mills to change their order files, W. P. B. officials pointed out.

Prices

Southern Hardwood—Southern lumber mills are being provided again with dollar-and-cent additions that they make in sales of specified "standard special" items of southern hardwood lumber when "standard special" material is requested by the buyer, under Amendment 18 to RMPR-97, effective May 1.

Steel Scrap—A formula for computing maximum prices for open hearth or blast furnace grades of steel scrap containing five per cent or more copper is provided by Order 1 under Section 14 (a) of MPR-4, effective April 26, and after that date sellers of such scrap may compute their own maximum prices instead of writing to O. P. A. for approval of a special price for the metal. Under the formula, the maximum price for any open hearth or blast furnace grade of steel containing five per cent or more copper shall be the value of the contained copper at 9.75 cents per pound plus the maximum shipping point price of the grade of steel scrap for the actual quantity of steel in each gross ton. The formula may be used in pricing copper-bearing scrap of open hearth and blast furnace grades only. No additions to the maximum steel scrap price may be made for a copper content of less than five per cent.

Waste Paper—Five modifications of the new invoicing and manifest requirements that became effective April 21, on all shipments of commercially packed wastepaper are provided by Amendment-12 to MPR-30: (1) The total weight of each grade and the weight of each bale need not be stated on invoices and manifests when there are no weighing facilities available to the commercial packer, or where the commercial packer is not engaged in the business of buying wastepaper for resale. (2) A broker need not state on his invoice the street address of the original shipper. However, a broker is required to note such street address on the copy of the invoice retained by him. (3) Where sellers are prohibited by railroad companies or governmental authorities, generally for security reasons, from entering upon the property for the loading of wastepaper into railroad cars, no manifest need be posted in such cars. (4) Where a seller changes the shipment so that the original manifest is no longer fully applicable, a new manifest must be prepared by such seller. (5) It is made clear that the manifest must be prepared by the first seller making delivery not only from a warehouse or packing plant, but also from other points of accumulation.

GENERAL NEWS

Labor Leaders Meet with Pres. Truman

Are satisfied that Roosevelt
policy for liberalizing of
retirements still goes

Railway labor leaders came away from an April 27 conference with President Truman with assurances that the new Administration contemplated no change in the late President Roosevelt's policy in support of legislation to liberalize the Railroad Retirement and Railroad Unemployment Insurance acts. That is what D. B. Robertson, president of the Brotherhood of Locomotive Firemen & Enginemen, told White House correspondents after the conference.

The liberalizing proposals, sponsored by the Railway Labor Executives Association, are embodied in H.R. 1362, introduced by Representative Crosser, Democrat of Ohio, who also made the White House call with the labor leaders. As noted in the *Railway Age* of January 27, page 248, the late President Roosevelt endorsed "the objectives" of the Crosser bill and the companion Senate bill (S.293) in January 22 letters which he wrote to Chairman Lea of the House committee on interstate and foreign commerce and Chairman Wheeler of the Senate committee on interstate commerce, who is sponsor of the Senate bill.

In addition to Messrs. Robertson and Crosser, the group which called on President Truman included George M. Harrison, president of the Brotherhood of Railway Clerks; A. E. Lyon, who has just succeeded Railroad Retirement Board member Julius G. Luhrsen in the position of R. L. E. A. executive secretary; L. M. Wicklein, vice-president of the Sheet Metal Workers' International Association; and L. P. Schoene, who has been R. L. E. A. counsel on the pension legislation matter.

Meanwhile House committee hearings on the Crosser bill had been concluded on April 26 with the presentation of President Harrison of the B. of R. C. Mr. Harrison appeared principally in support of the bill's proposal to extend the retirement and unemployment acts' coverage to include the employees of freight forwarders. The Clerks' organization represents 9,500 of the 11,400 forwarder employees, he said, adding that two of the three biggest forwarders, the Universal Carloading & Distributing Corporation and National Carloading Corporation, are railroad-controlled. The big three, Acme Fast Freight, Inc., being the other one, do about 90 per cent of the forwarding business, Mr. Harrison went on.

He also pointed out that forwarders compete with the railroads and particularly

with the Railway Express Agency which is covered by the acts. He stated in response to questions, however, that he would not urge extension of the coverage to include the trucking industry.

Superintendents' Annual Meeting Cancelled

The annual meeting of the American Association of Railroad Superintendents, usually held in Chicago early in May, has been postponed this year in support of the O. D. T. travel curtailment program and because it was deemed unwise to call a substantial number of operating officers away from their positions of duty. A meeting of the executive committee is scheduled to be held shortly to consider the committee reports and arrange for their publication and distribution to the members.

I. C. C. Revises Regulations for Destruction of Records

The Interstate Commerce Commission, Division 1, has issued a revised set of regulations to govern the destruction of records by steam railroads. The new "Issue of 1945" becomes effective June 1 and supersedes all previous issues, the latest of which was the issue of 1938.

Changes made by the revised order (with respect to records other than the specifically prescribed permanent records) in most cases substantially reduce the period for which records must be retained. A new section is included prescribing the period for which signal department records required by the Signal Inspection Act must be kept. There is also a provision in the regulations whereby railroads may be granted permission, upon application, to preserve photographic copies of certain records in lieu of original records or copies thereof.

Three Months Net Income Was \$139,500,000

Class I railroads in the first three months of this year had an estimated net income after interest and rentals of \$139,500,000 as compared with \$148,220,978 in the first quarter of 1944, according to the Association of American Railroads. The three months' net railway operating income before interest and rentals, \$246,063,085, compared with \$266,065,755 in the corresponding 1944 period.

March's estimated net income was \$62,800,000 compared with \$53,652,620 in March 1944; while the net railway operating income for that month was \$99,884,567, compared with March, 1944's \$93,853,327. March thus marked the first month in a period of 22 consecutive months when the net earnings of the carriers showed an increase as compared with the same month of the previous year.

Towns Not Ruined by Abandonments

Still follow general trends,
sometimes even reviving,
after loss of service

Communities which have lost railroad service constituted, in general, "a relatively depressed group" prior to and at the time of the abandonments, according to studies made by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission, which indicate that "whatever the importance of railways in the prosperity of communities may be, there are definite limits to that importance, in that communities may decline though they have rail service or prosper after losing such service." Results of such studies along with other findings are embodied in a comprehensive report on "Railroad Abandonments, 1920-1943," issued by the Bureau "as information," but not "considered or adopted" by the I. C. C.

The report (Statement No. 453) was prepared under the supervision of C. S. Morgan, the Bureau's chief carrier research analyst, by Floyd A. Ricard, associate economist, Theodore A. Fetter, associate economic analyst, and Paul L. Ambelang, associate economist. It is dated January, 1945, and was made public on April 28.

The section on "Effects of Abandonments on Communities" is based in the main on studies made of affected Ohio communities. The effects are measured by before-and-after figures on population, assessed valuations, selected property values, and the dollar value of retail sales. Checks of the Ohio findings with the situation in other states indicated the same pattern, so the general conclusions noted at the outset were set forth.

Pre-Motor Affluence Not Recaptured

Generally when communities improved after losing railroad service, they were found to have followed closely the trend for the state as a whole; but such post-abandonment improvements did not regain for them the position relative to the state which they had in 1910. Woodfield was the largest of the Ohio communities to lose railroad service for reasons other than exhaustion of natural resources. It had declined in population from 2,502 in 1910 to 2,317 in 1930. The abandonment order was entered in 1931, and in 1940 Woodfield had a population of 2,442.

In this connection another of the report's conclusions finds the nature of the evidence such that "while the declines (occurring as they did in large measure before abandonment) cannot be ascribed to the abandon-

ment, neither can the ensuing relative improvement be attributed to that loss." In another place the community studies are interpreted as having indicated that "while the presence of a railway favors the continuance of communities, it obviously is far from being sufficient to guarantee their continued existence and prosperity."

RRs Aid, But Don't Insure, Prosperity—Meanwhile the report had got under way with its discussions of abandonments by years, by class of carrier and class of service, by age of line, by type of territory served, and by causes leading to abandonment. There it notes that the commission, in 1,971 proceedings during the period from November, 1920, to December 31, 1943, authorized the abandonment of 29,012 miles of line. In the nine years 1935-1943, authorizations numbered 1,059 and embraced 15,907 miles. The study calls attention to the fact that an upward trend which began in the late 'Twenties was accelerated by the ensuing depression, 1933 becoming the peak with authorized abandonments totaling 2,297 miles. This was nearly equaled by 1942's 2,237 miles, but that figure "consisted in substantial part of miles removed during the government's program for requisitioning steel rails."

Three per cent of the mileage on which abandonment was authorized in the 1935-43 period was found to be in operation at the end of 1943. And while operation had been discontinued on certain other lines, they were still in place on that date. In this 1935-43 period, the Class I roads and their Class II and III subsidiaries were given permission to abandon four per cent of the mileage they operated in 1934, while independent Class II and III roads were granted authority to abandon 27 and 48 per cent, respectively, of their 1934 mileage. Entire lines constituted 53.5 per cent and 77.5 per cent, respectively, of the Class II and III mileage authorized to be abandoned. Protests "of varying degree," as the report's summary puts it, were made in about 32 per cent of the total cases and as to about 55 per cent of the authorized mileage.

Motor Rivalry Main Depressant—Service on lines authorized to be abandoned consisted of some form of freight and passenger service on 56 per cent of the mileage involved, of freight service only on 22 per cent, of "freight-on-call" service on five per cent, and of passenger service only on one per cent; no service was being rendered or none was indicated as to 16 per cent. Service was being given to agricultural areas by 51 per cent of the mileage involved, to mining and lumbering areas by 26 per cent, and to manufacturing, commercial, recreational, and residential areas by four per cent. No data were found as to the population served or as to any industry served by the remaining 19 per cent.

Highway competition was "mainly responsible" for 58 per cent of the mileage in authorized abandonments; exhaustion of natural resources for 19 per cent; improvement of railroad plant for 10 per cent; relocation or cessation of industry for seven per cent; and miscellaneous factors, including "general unprofitableness" for six per cent. These causes of abandonments are

found to have varied in importance from region to region. Highway competition was most evident in the New England region and least evident in the Western and Pacific regions. Depletion of natural resources figured to the greatest degree in the Great Lakes-Eastern and Southern regions, and least in New England.

Dropping Dead Lines Aids War Program—The contraction of railroad plant "has both impeded and benefited the war effort," the report finds. "The transportation demands of World War II," it explains, "have placed a tremendous burden on the nation's railway system. The abandonment of unprofitable and unnecessary mileage has contributed in a measure to the railroads' ability to meet those extraordinary demands. Since 1920, and especially during the depression years, service has been discontinued on close to 29,000 miles of railroad, though over a fifth of this mileage represented abandonments of entire lines. This contraction of plant has not been beneficial to the war effort in instances in which war industries or other war facilities could have used this particular rail service to better advantage than existing roundabout rail service or other service. On the other hand, operation of these lines or, more specifically, of the 12,486 miles of authorized abandonments of parts of line, would have affected the financial condition of the carriers and thereby have lessened to at least a minor degree their ability to meet the rising volume of war traffic, and have added to the railroads' man-power and equipment difficulties. Data are lacking with which

to measure the net effect of these abandonments on the war effort."

In the latter connection, however, it is noted that many abandonments involve the substitution of railroad-operated highway service in substitution for rail service. The report promises a discussion of "railroad motor operations in their relation to abandonments" in another Bureau study now in preparation.

As to the financial aspects of abandonments, the report finds that the "great majority" of the lines involved "were being operated at a loss" as gaged by the methods of estimating revenues and expenses accepted by the commission. The estimated annual losses on lines abandoned during the 1935-43 period total \$9,544,000, a "substantial part" of this amount pertaining to entire lines rather than parts of systems. Roads classified as financially "weak" on the basis of the number of times fixed charges were earned were involved in abandonment proceedings "to a somewhat greater extent" than roads classified as financially strong. Detailed analyses of abandonments since 1920 on the Boston & Maine and the Chicago, Burlington & Quincy are presented in an appendix.

Many Requests to Quit Are Denied—Turning to commission denials of abandonment applications, the report notes that there were 127 of them involving 2,816 miles of line in the 1921-43 period. More than 90 per cent involved Class I roads or their subsidiaries, while some three per cent involved entire lines. After the original denials, abandonments were later authorized with respect to 43 per cent of



Center for Servicemen

Service men using the Omaha, Neb., Union Station of the Union Pacific, Chicago & North Western, Milwaukee, Rock Island, Missouri Pacific, and Wabash, are now enjoying new canteen facilities in the station's service men's center. The new canteen, which was opened informally on February 24, can provide refreshments to groups of 150 men as compared with a capacity of only 25 men in the old canteen. The room is paneled in knotty pine, finished with bleached mahogany stain. The walls above the paneling are blue contrasting with the Chinese red venetian blinds at the windows. The new service counter is 40 feet long and is provided with additional coffee urns, work tables, sinks, and an electric dishwasher. The improvements were made by Union Pacific Forces, the cost being apportioned among the railroads serving the station. The canteen is staffed by various women's organizations of Omaha.

the mileage involved. The average period elapsing between denials and subsequent authorization of abandonment ranged from 3.5 years in the five-year period 1936-40 to 5.4 years in the period 1931-35.

"With proper caution," the report says, "mention may be made of the per cents of cases and miles denied, 5.8 and 5.3, respectively, in which applicants proposed to substitute highway service and of the per cents of cases and miles authorized, 0.4 and 0.3, respectively. This difference in per cents would seem to indicate, other things being equal, that if there is enough traffic to justify motor service by the railroad there also may be enough traffic to require continued operation of the line. On the other hand, if there is not sufficient traffic to make motor service attractive to the railroad, it is almost certain to follow that there is not enough traffic to justify continued operation of the railroad."

The extent to which loss of mileage through abandonments has been offset by new construction is noted briefly in an appendix to the report. There are presented data showing that the railroads applied in the years 1922 to 1943 for authority to construct 22,575 miles of line, which would be equivalent to about 80 per cent of the mileage authorized to be abandoned in the same period. The commission, however, approved the construction of only 10,210 miles, denying applications for authority to construct 7,400 miles while applications to construct 6,306 miles were dismissed or withdrawn. Of the 10,210 miles on which construction was authorized, 7,240 miles had been built as of November 1, 1943. The mileage actually built in the 1922-43 period was thus equivalent to about one-fourth of the mileage abandoned in the same period.

Combined Air-Rail Express for San Francisco Conference

Ten representatives of the Railway Express Agency are handling all emergency shipments for diplomats, newspapermen and photographers at the United Nations Conference, in San Francisco. From the main lobby of the Veterans War Memorial building where three express booths have been set up, daily shipments of news reels are rushed by truck to the nearest airport for distribution to film centers throughout the country. Other shipments, mostly on priority, are also being sent to or from San Francisco by combined air-rail express, the Agency has announced.

Carrier Wants I. C. C. Probe of Bush Terminal Tariffs

The Bush Terminal Railroad has asked the Interstate Commerce Commission to investigate the lawfulness of the services, practices and charges in effect in connection with the receipt and delivery of L.C.I. freight by it at buildings 1 to 10 of the Bush Terminal Buildings Company at Brooklyn, N. Y. Only through such action, the complaint said, can the carrier obtain relief from an injunction which the buildings company has obtained from the court to prevent the carrier from substituting truck service for rail service to these buildings.

In a finance docket proceeding (reported

in *Railway Age* of August 12, 1944, page 285) the commission required the railroad to continue pick-up and delivery service at these stations, but did not require restoration of L.C.I. freight car service. The railroad had alleged that the existing tariffs afford the buildings company undue and unreasonable preference and advantage.

March's Ton Miles Slightly Above Previous Year

The volume of freight traffic, handled by Class I railroads in March, amounted to 62,900,000,000 ton-miles of revenue freight, according to a preliminary estimate made public by the Association of American Railroads. The increase over March, 1944, was 0.4 per cent.

Revenue ton-miles of service performed by Class I roads in the first three months of 1945 was 4.1 per cent under 1944, although 2.5 per cent greater than the corresponding period two years ago.

The following table summarizes revenue ton-miles for the first quarter of 1945 and 1944:

	1945	1944	Per-cent change
Jan.	56,845,141,000	60,487,997,000	Dec. 6.0
Feb.	55,300,000,000	59,307,320,000	Dec. 6.8
March	62,900,000,000	62,670,213,000	Inc. 0.4
Total 3 months	175,045,141,000	182,465,530,000	Dec. 4.1

¹ Revised estimate

² Preliminary estimate

N. E. Truckers Increase Rates

General increases in truck rates in New England territory became effective last week when the Interstate Commerce Commission failed to suspend tariffs which had been protested by the Office of Price Administration. The increase raises all minimum charges 10 cents per 100 lb. and other rates one cent to 2½ cents per 100 lb.

Truckers operating in the Middle Atlantic states have before the commission a proposal to make increases, effective May 14, of one cent per 100 lb. in truckload rates and 2½ cents in L.C.I. and any-quantity rates.

Budd Will Build Complete Range of Passenger Cars

At Philadelphia on May 2, Edward G. Budd, president of the Edward G. Budd Manufacturing Company, announced that the company will resume the manufacture of lightweight stainless steel railway passenger cars as soon as man-power and materials are available and will include among its post-war products, cars for both day and night occupancy, as well as all types of recreational facilities required for the well-balanced, all-purpose consist of a train. The program includes resumption of the reserved seat sleeper coaches, or chair cars, as well as dining, lounge, tavern, observation, and several types of sleeping cars.

"Our designers have ready for the post-war market a comprehensive range of railway passenger cars which will enable us to offer to the railroads of the country complete train consists for day and night traffic, including recreational and revenue-producing units, all of uniform design," Mr. Budd said.

The company will give special attention,

he said, to developing car types designed to provide low-cost bedroom service, in line with its policy of furnishing equipment which would help to attract mass travel to the railroads. "We believe both the railroads and the traveling public can best be served by furnishing commodious coach and luxurious sleeper coach service at coach fares. In addition, we expect there should be a substantial market for sleeping cars which would furnish more luxurious overnight service but still at moderate cost. We expect to use part of our facilities for the manufacture of equipment of this type."

The intensive development of this sort of railroad travel after the war, Mr. Budd expects, will result in maintaining the volume of travel experienced during the war, and thus enforce a great and continued demand for the type of modern, streamlined stainless steel railway cars the Budd company manufactures.

Emergency Board Reports on Pullman Conductors Case

President Truman last week received the report of a National Railway Labor Panel emergency board which investigated a dispute between the Pullman Company and its employees represented by the Order of Railway Conductors. Some 40 issues were raised in the proceeding, including demands for a reduction in the conductors' basic work month and for pay covering all time spent on long trips.

The basic-month demand was for a reduction from 240 hours to 210 hours, and the board found justified a cut to 225 hours with time-and-one-half pay after 235 hours. With respect to pay for time spent on long trips the board rejected the employees' demand, recommending, with a few exceptions, that the present practice of deducting four hours for the first night and six hours for each succeeding night be continued.

Other issues included those involving mileage limitations, lay-overs at stations, rest periods, assignment of runs, and division of work between conductors and porters-in-charge. Members of the board, which was appointed by Panel Chairman H. H. Schwartz, were: Ernest M. Tipton, judge of the Missouri Supreme Court; H. B. Rudolph, judge of the Supreme Court of North Dakota; and John A. Lapp, industrial relations consultant of Chicago.

I. C. C. Service Orders

Interstate Commerce Commission Service Order No. 303, establishing icing restrictions on cabbage, has been set aside, effective May 1, by order No. 303-A.

The provisions of Service Order No. 260, which prohibits salting of ice in refrigerator cars loaded or to be loaded with citrus fruit in California, Arizona, Texas, or Florida, have been modified by Amendment No. 1 to the order, effective through the month of May, to allow salting with 2 per cent salt of bunker ice in cars loaded with grapefruit in Texas.

Under Amendment No. 7 to Service Order 104, effective April 26 through May 31, the provisions of that order with respect to the use of certain refrigerator cars in place of box cars to load westbound transcontinental shipments have been ex-

tended to cover carload shipments of ammonium nitrate in bags from points in the United States to Dinamita, Mexico, of peat moss from British Columbia to stations in Arizona and California, and of flour from Idaho, Montana, Oregon and Washington to California destinations.

Freight Car Loading

Loadings of revenue freight for the week ended April 28 totaled 899,221 cars, the Association of American Railroads announced on May 3. This was an increase of 35,158 cars or 4.1 per cent above the preceding week, an increase of 48,780 cars or 5.7 per cent above the corresponding week last year, and an increase of 110,432 cars or 14 per cent above the comparable 1943 week.

Loading of revenue freight for the week ended April 21 totaled 864,063 cars, and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, April 21

District	1945	1944	1943
Eastern	167,226	162,525	156,426
Allegheny	192,608	189,840	173,518
Pocahontas	54,239	54,921	55,693
Southern	132,129	124,904	120,771
Northwestern	117,860	116,260	97,240
Central Western	127,471	116,094	118,406
Southwestern	72,530	74,193	72,109
Total Western Districts	317,861	306,547	287,755
Total All Roads	864,063	838,737	794,163
Commodities			
Grain and grain products	51,309	37,976	45,214
Livestock	15,401	15,544	15,156
Coal	165,134	173,922	164,978
Coke	14,458	14,744	14,533
Forest products	42,544	43,495	43,186
Ore	61,147	60,131	35,383
Merchandise l.c.l.	113,662	107,055	98,563
Miscellaneous	400,408	385,870	377,150
April 21	864,063	838,737	794,163
April 14	846,391	798,683	780,908
April 7	764,763	787,985	789,019
March 31	835,226	786,106	772,102
March 24	816,058	777,578	787,340

Cumulative Total,

16 Weeks .. 12,545,085 12,654,258 12,176,000

In Canada.—Carloadings for the week ended April 21 totaled 70,323 as compared with 70,826 for the previous week, and 70,224 for the corresponding period last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
April 21, 1945	70,323	38,882
April 22, 1944	70,224	38,449

Cumulative Totals for Canada:

April 21, 1945	1,052,700	596,303
April 22, 1944	1,086,432	638,185

Freight Forwarder Insurance

The Interstate Commerce Commission has further postponed from May 1 until July 2 the effective date of its order in the Ex Parte 159 proceeding, wherein it prescribed rules and regulations for freight forwarders in the matter of the filing of surety bonds, insurance policies, qualifications as self-insurer, or other securities.

Tells Truckers to Save Tires

Col. J. Monroe Johnson, director of the Office of Defense Transportation, in an open letter to the nation's truck operators, has again urged continued and intensified conservation of tires. The appeal, addressed

to all operators of property-carrying commercial motor vehicles, states: "Practically all available truck tires, especially of the larger sizes, are now on running wheels. The condition of those tires is poor. Many are recaps. The supply available for replacement is sharply limited—the allotments are less than the needs. Summer heat and careless operations will make the approaching months a critical period.

"With little hope for relief in the near future, it is your responsibility as an operator, both in your own interest and to safeguard war-time transportation, to protect your tires and so assure the continuance of transportation service. This responsibility is now an obligation to exercise every precaution so that not one tire-mile be lost through careless or wasteful operations.

Lyon Heads R. L. E. A.

A. E. Lyon, president of the Brotherhood of Railroad Signalmen, became executive secretary of the Railway Labor Executives Association on May 1, succeeding Julius G. Luhrs. Mr. Luhrs has assumed his duties as the labor member of the Railroad Retirement Board, a position to which he was appointed by the late President Roosevelt.

March Truck Traffic

Motor carriers reporting to American Trucking Associations, Inc., transported in March 2,141,412 tons of freight, an increase of 14.4 per cent above the 1,871,948 tons reported for February and a rise of 5.5 per cent above the March, 1944, total of 2,030,531 tons. The A. T. A. index, based on the 1938-1940 average monthly tonnage of reporting carriers, was 205.16 in March as compared with February's 172.44.

The foregoing figures, according to the A. T. A. statement, are based on reports from 247 truckers in 42 states. Truckers in the Eastern district reported increases of 14.6 per cent above February and 7.9 per cent above March, 1944. In the Southern region there was an increase of 10.6 per cent above February but a decrease of 0.8 per cent below March, 1944. In the Western district increases of 15.3 per cent above February and 2.4 per cent above March, 1944, were reported.

Representation of Employees

The Order of Railway Conductors has retained its right to act as Railway Labor Act representative of road conductors employed by the Missouri-Kansas-Texas and Missouri-Kansas-Texas of Texas. The O. R. C. beat the challenging Brotherhood of Railroad Trainmen by a vote of 179 to 166 in a recent election which has been certified by the National Mediation Board.

As a result of another recent election the Brotherhood of Locomotive Firemen & Enginemen has supplanted the Brotherhood of Locomotive Engineers as representative of locomotive engineers employed by the Railway Transfer Company of Minneapolis, Minn. The Railway Employees Department, American Federation of Labor, System Federation No. 2, has been chosen by mechanical department foremen and su-

pervisors on the Missouri Pacific, Missouri-Illinois, and Union of Memphis.

The International Association of Machinists and the International Brotherhood of Boilermakers have been chosen, respectively, by Peoria & Pekin Union machinists and boilermakers, their helpers and apprentices; while carmen, their helpers and apprentices (including coach cleaners) employed by the Patapsco & Back Rivers have chosen the Brotherhood of Railway Carmen of America. These three unions are also affiliated with the A. F. of L. and operate through its Railway Employees Department.

B. I. R. Tax and Public Aids Reports to Be Printed

Printing as House documents of reports on Public Aids to Domestic Transportation and Carrier Taxation, which were made by the defunct Board of Investigation and Research, was ordered by the House on April 27 when it adopted House Resolutions 164 and 165. The resolutions were sponsored by Chairman Lea of the committee on interstate and foreign commerce, who stated in letters to Chairman Jarman of the committee on printing that there had been "great demand" for the reports which contain "valuable information."

Mr. Lea also pointed out that Congress appropriated "well over \$1,000,000" to B. I. R. and that the public aids and taxation studies were two of the specific assignments which the Transportation Act of 1940 gave to the board. The Lea letters were reproduced in the printing committee's favorable reports on the resolutions. It was also noted that the Public Printer had estimated the cost of printing the public aids report at \$13,122, and the taxation report at \$5,532.

Bill Calls for Billion Dollar Airport Program

A billion dollar airport program, financed by \$500,000,000 of federal-aid funds matched by an equal amount of state and local money, is called for in S. 2, a bill sponsored by Senator McCarran, Democrat of Nevada, which was reported favorably this week from the Senate committee on commerce. The billion dollars would be spent over a five-year period, and the program would not begin until the end of the war, "unless the Congress determines otherwise," the report said.

The report further explained that the bill "implements the recommendations of the Civil Aeronautics Administration in connection with the national airport plan submitted to the Congress in November, 1944" (see *Railway Age* of December 2, 1944, page 860). There is a provision authorizing an immediate appropriation of \$3,000,000 to C.A.A. for "preliminary surveys and planning." Among other provisions are those fixing the eligibility of states and communities for allotments of the federal-aid funds, including a stipulation providing, as the report put it, "for the expenditure on aviation development of amounts at least equal to the proceeds from any special state taxes on aviation fuel or from other special fees or taxes imposed on aircraft, aviation, aeronautical facilities or operations."

The C.A.A. proposal of last November

was that the program be developed over a period of from five to ten years. "Your committee," said the report, "favors a 5-year program rather than a 10-year program because it believes that the sooner we get this program completed, the faster our civil aviation industry will grow. We should push rather than delay civil aviation so that all parts of our nation may speedily enjoy the great benefits of air travel."

Asks Shippers to Help Cut Freight Losses

Poor packaging, loading and handling of freight shipments brought loss and damage claims of \$100,000,000 in 1944, of which the railroads' bill was \$60,000,000, J. E. Bryan, general chairman, National Management Committee, Ninth Perfect Shipping Campaign, told a special luncheon meeting at Chicago on April 26. The meeting was jointly sponsored by the Traffic Club of Chicago and the Mid-West Shippers Advisory Board.

Mr. Bryan, who is as well general traffic manager, Wisconsin Pulp & Paper Manufacturers Traffic Association, told his listeners, that unless something is done about it, losses for this year may reach an even higher total. He declared that only through active co-operation between shippers, carriers and receivers can this tremendous annual loss be reduced.

Other speakers on the program were T. J. O'Shaughnessy, public relations officer of the Chicago, Rock Island & Pacific, and Col. M. C. Thiem, representing Col. Dan A. Hardt, commander of the Sixth Transportation Zone, who was unable to be present.

Propose 9-Months Extension of Truck-Forwarder Rates

Bills to meet the present May 16 deadline by further extension of the period within which forwarders must change over from joint-rate arrangements with motor carriers to the use of assembling and distribution rates published by the carriers were introduced in the Senate and House last week. The bills, S.926 and H.R.3038, are sponsored respectively by Chairman Wheeler of the Senate committee on interstate commerce and Chairman Lea of the House committee on interstate and foreign commerce.

As introduced, they proposed a 12-months extension, but the House committee, which reported H.R.3038 favorably a couple of days after its introduction, amended it to cut the proposed extension period to nine months. The stop-gap proposal came after the Senate committee had received from the Interstate Commerce Commission an adverse report on the other Wheeler bill (S.797, which is like Lea bill H.R.2764) embodying more elaborate proposals to meet the deadline by permitting the joint-rate arrangements to continue until the commission determined a permanent policy with respect to the matter (see *Railway Age* of April 21, page 718).

The House committee's favorable report on H.R.3038 notes that little progress has been made on changing over from the joint-rate arrangement to assembling and

distribution rates, and adds that the "complexity of the problems involved" calls for an allowance of further time "with a view to formulating permanent legislation during the period of further extension." The report also reproduces letters wherein the extension is endorsed by Secretary of War Henry L. Stimson and Deputy Director C. D. Young of the Office of Defense Transportation.

Secretary Stimson voiced the War Department's general opposition to joint rates between forwarders and truckers, but he nevertheless favored the bill because termination of the joint rates at this time, "in view of the limited publication of assembling and distribution rates by motor carriers, would in all probability interfere with the operations of freight forwarders to the detriment of the war effort." General Young said it was the judgment of O. D. T. that abrupt discontinuance of the joint rates "would cause an immediate shift of a substantial amount of merchandise traffic from the motor carriers to the railroads." He added that it would be "unfortunate" if, at this time, there were to be "any decrease in the proportion of merchandise traffic handled by motor carriers."

British Railways Air Adviser Talks of Post-War Air Plans

In an interview on April 28 at the British railways' headquarters in New York, Dennis H. Handover, air adviser to the British railways, dealt with the "white paper," setting forth the British government's views on post-war air transport, and concurred with the points made therein by the Minister for Civil Aviation that British enterprises already engaged in other branches of transport and travel, with their extensive organizations at home and overseas, can with great economy of management be used to provide that country's post-war air transport.

For efficiency of organization, three main air transport corporations have been proposed, to be responsible for air services in the following areas: (1) Commonwealth (British Empire), Atlantic and Far Eastern services; (2) European air routes and internal services of the United Kingdom; and (3) a South American route. There are to be no government subsidies and no transfer of shares by participating organizations.

Elaborating on the European and United Kingdom routes, Mr. Handover explained that these are to be assigned to a new company, in which participants will be the railway companies, which, in the past, have successfully operated the majority of the U. K. air services, the short sea shipping lines, travel agencies and the British Overseas Airways Corporation. The latter organization is credited with most of the development and operation of the established Commonwealth, Atlantic and Far Eastern services. It is anticipated European and internal air routes are likely to be more lucrative than some of the Commonwealth routes which are assigned to B. O. A. C. as the directing corporation, and it is proposed that B. O. A. C. be given a substantial, though not a majority, financial interest in the new European corporation.

The third new company will be that assigned to South America, and will be directed largely by those British shipping lines now operating to South America, who have associated together for this purpose as British Latin-American Airlines Limited. B. O. A. C. is to participate in this company as well.

Mr. Handover pointed out that some 100 routes within the United Kingdom have been planned, with continental routes between the U. K. and the Continent numbering somewhat less. The new company will transport passengers, mails and air cargo and "it is intended to set up an extensive organization with the assistance of the travel and forwarding agents to provide fullest facilities over the widest possible network," Mr. Handover added. While at the outset the majority of services will focus on London, as air transport develops, other centers in the United Kingdom can expect to be connected direct with the Continent.

In the "public interest," the new company will be responsible for all the British air services on the scheduled routes, its rights to run on these routes within the United Kingdom being exclusive. Routes to Europe will be in parallel, and it is hoped, in some cases will be in conjunction with other European countries. Also "in the public interest" will be air operation over some routes which at the outset will show a loss, and others which may never show a profit, Mr. Handover added.

The railways' air adviser made it clear, however, that these plans of which he spoke were still "paper plans," and awaited ratification by the Parliament. He added, too, that Great Britain lacks now both personnel and equipment to provide all these services at once, but he predicted a possible "skeleton service" within six months after the war.

Baldwin Engineer to Address N. Y. Railroad Club

Ralph P. Johnson, chief engineer, Baldwin Locomotive Works, will discuss "The Four-Cylinder Duplex Locomotive, as Built for the Pennsylvania Railroad," when the New York Railroad Club next meets at 8 p.m., May 17, in the auditorium, Engineering Societies Building, 33 West 39th street, New York. Stereopticon slides will supplement the talk.

Superhighway Bill

Another superhighway bill, H.R. 3036, has been introduced in the House by Representative Hand, Republican of New Jersey. It would provide for the construction and operation by the federal government of "a new system of superhighways and airports for national defense in time of war, or other emergencies, and for government and commercial use by automobiles and airplanes in time of peace."

Butler Heads National Highway Users Conference

Arthur C. Butler, manager of the Military Vehicles Division of the Automotive Council for War Production, will become director of the National Highway Users Conference on June 1, succeeding Chester H. Gray who resigned last fall. P. D. Mc-

Lean, who has been acting director since Mr. Gray's resignation, will become assistant director when Mr. Butler assumes the directorship.

Prior to the beginning of the war, when the Automotive Council for War Production was organized, Mr. Butler was manager of the Motor Truck Division of the Automobile Manufacturers Association, a position which he had held since 1932. The announcement of his appointment to the Highway Users Conference directorship was made in an April 30 statement from Alfred P. Sloan, Jr., chairman of the conference. The statement said that the appointment was made "on the recommendation of a special reorganization committee largely comprised of representatives of motor vehicle user organizations affiliated with the conference." Mr. Sloan also said that at no previous time in the evolution of highway transportation have there been "so many important problems affecting its long-term opportunities and responsibilities."

More Time for K. C. S. Signals

A further 30-day extension of the time within which the Kansas City Southern is required by the Interstate Commerce Commission to complete the installation of an automatic block signal system on about 26.5 miles of its line from Joplin, Mo., to McElhany has been authorized by Commissioner Patterson. The installation was prescribed under a standing show-cause order which would require the road to equip its entire main line with a block system, and the date set for completion, now May 31, has been extended from time to time due to difficulties in obtaining material.

Civility Not Rationed, White Tells D. L. & W. Employees

Rapping the fellow who attempts to justify his failure to give good service "because there's a war on," William White, president of the Lackawanna, in a personal letter to all D. L. employees has emphasized the importance of civility in dealing with the public, especially under the stress of war conditions.

He reminded his fellow-workers that it is not always just the people who are discourteous who injure the reputation of the road, but those, as well, who fail to exhibit a courtesy when opportunities for small kindnesses are endless.

"All of the service that we render the public today is not as good as we would like to have it," President White explained. "Freight isn't moving as fast as it did. Less carload freight is taking too long in transit. Our passenger cars aren't always as clean as we would like to have them, nor in as good condition as we would like. Our dining cars can't provide the kind of menus we would like to provide. The people generally know why, and they accept it cheerfully; but they know that courtesy and patience and tact are not rationed. There is no excuse for a shortage of these commodities."

Observing that courtesy pays dividends, Mr. White said that after the war, the Lackawanna did not wish to apologize for

a "tactless, wartime attitude." It wanted to be looked upon as a road where railroaders have "good breeding."

Supply Trade

F. F. Rose, assistant vice-president, has retired after more than 44 years of service in the sales department of the **American Car & Foundry Co.**

W. E. Remmers, vice-president of the **Electro Metallurgical Sales Corporation**, has been elected vice-president of the **Electro Metallurgical Company**, a unit of the **Union Carbide & Carbon Corp.**

Ralph Schmidt, assistant chief mechanical engineer, has been appointed chief mechanical engineer of the **Canadian Locomotive Company** to succeed **G. Cavin**, who has retired after 33 years' service with the company.

E. Archer Turner, vice-president and general manager, has been elected president of the **Standard Stoker Company** to suc-



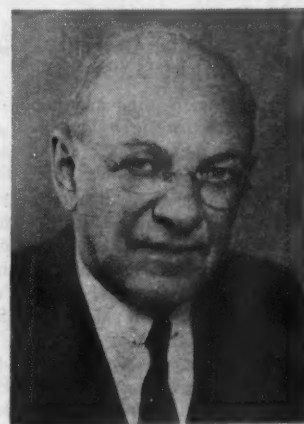
E. Archer Turner

ceed **H. P. Farrington**, who becomes chairman of the board. Mr. Farrington will continue active in the executive management. Mr. Turner, who has been associated with the locomotive stoker industry since 1918 and with the Standard Stoker Company since 1928, will make his headquarters in New York. **Karl W. Mueller**, technical assistant to the general manager, has been appointed works manager at Erie, Pa., and **Charles J. Surdy**, executive assistant to the general manager, has been appointed assistant to the president.

Frank E. Selz, whose promotion to assistant to the president of the **General American Transportation Corporation**, Chicago, was reported in the *Railway Age* of April 21, was born at Chicago on December 29, 1892, and is a graduate of Yale University. He entered the service of General American in February, 1931, being employed in the corporation's plant at East Chicago, Ind., and one year later he was made a salesman in the refrigerator car department, with headquarters at Chicago. In 1935 Mr. Selz was elected a vice-president of the General American Precooling

Corporation, a subsidiary of General American and in 1936 he became sales executive of the tank car department of the parent company, the position he held at the time of his new promotion.

William D. Truesdale, a director and treasurer of the **Inland Steel Company**, has been elected vice-president in charge of finance, with headquarters as before at



William D. Truesdale

Chicago. **Russell L. Peters**, assistant treasurer, has been advanced to treasurer, succeeding to the duties of Mr. Truesdale, and **E. A. Horne**, formerly a vice-president of **Walter E. Heller & Co.**, has been appointed assistant to the treasurer.

Mr. Truesdale joined Inland Steel in 1907 as general auditor and in 1919 he was promoted to treasurer. Three years later he was advanced to secretary, holding the two positions for the following ten years. In 1924 he was elected a member of the board of directors and since 1931 he has served as treasurer of the company.

William S. Hefferan, Jr., whose election to vice-president and general counsel of the **General American Transportation Corporation**, Chicago, was reported in the



William S. Hefferan, Jr.

The Railway Age of April 21, was born at Chicago on August 15, 1893, and received his higher education at the University of Chicago. In 1916 he entered the law firm of Stein, Mayer & David, and in 1917 he entered the U. S. Army to serve during World War I. Mr. Hefferan returned to

the practice of law in 1920 as a partner of the legal firm, and in 1931 he went with General American as assistant secretary. In 1935 he was elected a director of the corporation, and five years later he was promoted to general counsel, the position he held at the time of his election to vice-president.

R. A. Phillabaum, a former employee of the Wabash and of the New York Central, has been appointed a service representative of the **Locomotive Finished Material Company**, Atchison, Kan., with headquarters at Chicago.

J. C. Hamilton has been appointed service engineer for Quimby Pumps and Fort Pitt Steel Castings in Chicago and surrounding territories for the **H. K. Porter Company**, Pittsburgh, Pa. Mr. Hamilton previously was with the sales department of the Pittsburgh Equitable Meter Company.

John E. Wright, regional sales manager, has been appointed western sales manager of the **Edward G. Budd Manufacturing Company's** railway car division, with headquarters in Chicago. **Fitzwilliam Sargent**, regional sales manager, has been appointed eastern sales manager. **Samuel F. Felton**, sales manager, has resigned from the company's employ.

Herbert A. May has been elected assistant to the president of the **Westinghouse Air Brake Company**. **C. D. Stewart** has been elected vice-president, engineering; **S. L. Poorman**, assistant vice-president, commercial activities; **A. M. Wiggins**, assistant vice-president, patents and legal matters; and **J. S. Smith**, an assistant treasurer. All five have been associated with the company for a number of years.

Colonel G. deFreest Larner has been appointed assistant to the president of the **H. K. Porter Company**, Pittsburgh, Pa., in charge of termination of war contracts, renegotiation, and special tax problems. Colonel Larner recently was returned to inactive status after more than three and one-half years of duty with the Army Air Forces in England and the United States. As advisor to the Harriman Mission in London before our entry into the war, he helped draft plans for co-ordinated American and British industrial production. He formerly was a deputy administrator of the N. R. A. and has been connected with the Business Advisory Council in Washington. Prior thereto, he was associated with the Guaranty Trust Company of New York and the banking firm of Brown Brothers & Co.

TRADE PUBLICATIONS

PORTER DIESEL-ELECTRIC LOCOMOTIVES.—In a 48-page booklet, printed in color, the **H. K. Porter Company, Inc.**, Pittsburgh, Pa., describes the design, construction, operation and advantages of Porter Diesel-electric locomotives. For standard gauge lines these range in capacities from 330 to 650 hp. Also illustrated are the following types of Porter locomotives: Diesel-electrics for narrow-gauge lines, Diesel mechanical and gasoline, fireless steam, and steam, and special locomotive designs.

Financial

ABERDEEN & ROCKFISH.—Refinancing.—This road has applied to the Interstate Commerce Commission for authority to issue \$90,000 of 3½ per cent first mortgage bonds and \$80,300 of 4¼ per cent cumulative preferred stock in connection with the retirement of \$67,000 of 4½ per cent serial refunding bonds and \$74,900 of 6 per cent preferred stock outstanding, the call price being 105 on both.

AKRON, CANTON & YOUNGSTOWN.—Annual Report.—The 1944 annual statement of this road shows a net income, after interest and other charges, of \$483,638, as compared with a net income of \$738,282 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	171.3
RAILWAY OPERATING REVENUES	\$4,602,770	+\$102,500
Maintenance of way and structures	874,045	+182,489
Maintenance of equipment	438,078	+20,358
Transportation	1,379,027	+162,031
TOTAL OPERATING EXPENSES	3,135,691	+429,353
Operating ratio	68.1	+8.0
NET REVENUE FROM OPERATIONS	1,467,079	—326,853
Railway tax accruals	576,604	—124,002
NET RAILWAY OPERATING INCOME	692,090	—222,651
TOTAL INCOME	726,180	—263,157
Rent for leased equipment	66,600	+2,075
Interest on funded debt	167,305	—2,626
TOTAL DEDUCTIONS FROM GROSS INCOME	242,542	—8,514
NET INCOME	483,638	—254,644

ALTON.—Promissory Notes.—Division 4 of the Interstate Commerce Commission has authorized this road to issue \$1,340,000 of promissory notes in connection with its purchase from the Pullman-Standard Car Manufacturing Company of 500 50-ton box cars at a cost of \$3,350 each. The transaction will be financed by the First National Bank of Chicago over an 8-year period at an interest rate of 1.9 per cent annually.

BELT RAILWAY OF CHICAGO.—Annual Report.—The 1944 annual report of this road shows a net income, after interest and other charges, of \$233,994, as compared with a net income of \$438,828 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
RAILWAY OPERATING REVENUES	\$7,680,111	+\$178,929
Maintenance of way and structures	655,816	+93,893
Maintenance of equipment	693,236	+62,619
Transportation—rail line	3,567,166	+188,951
TOTAL OPERATING EXPENSES	5,140,961	+356,300
Operating ratio	66.94	+3.15
NET REVENUE FROM OPERATIONS	2,539,149	—177,371
Railway tax accruals	583,022	—449,047

RAILWAY OPERATING INCOME	1,956,127	+271,676
Net rents—Dr.	183,627	+532,817
NET RAILWAY OPERATING INCOME	1,772,500	—261,141
Total other income	83,169	+3,739
TOTAL INCOME	1,855,669	—257,403
Rent for leased roads and equipment	1,617,767	—48,406
TOTAL FIXED CHARGES	1,620,660	—45,531
NET INCOME	233,994	—204,834
Disposition of net income:		
Miscellaneous appropriations of income		—45,175
BALANCE TRANSFERRED TO EARNED SURPLUS	233,994	—159,659

BESSEMER & LAKE ERIE.—Annual Report.—The 1944 annual report of this road shows a net income, after interest and other fixed charges, of \$2,254,930, as compared with a net income of \$1,483,223 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	213.77
RAILWAY OPERATING REVENUES	\$19,561,182	—\$205,480
Maintenance of way and structures	1,746,139	—107,536
Maintenance of equipment	8,812,549	—387,265
Transportation	4,080,855	+267,705
TOTAL OPERATING EXPENSES	15,299,468	—351,750
NET REVENUE FROM OPERATIONS	4,261,714	+146,270
Railway tax accruals	3,235,092	—421,466
RAILWAY OPERATING INCOME	1,026,621	+567,737
Net rents	2,090,137	+277,064
NET RAILWAY OPERATING INCOME	3,116,759	+844,801
Total other income	100,424	+5,930
TOTAL INCOME	3,217,183	+850,730
Interest on funded debt	847,175	+50,431
TOTAL DEDUCTIONS FROM GROSS INCOME	915,666	+85,970
NET INCOME	2,254,930	+771,707

CHESAPEAKE & OHIO.—Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority to assume liability for \$2,500,000 of equipment trust certificates in connection with the purchase from the Pullman-Standard Car Manufacturing Company of 990 50-ton box cars at a total cost of \$3,256,476.

CHICAGO & EASTERN ILLINOIS.—Refinancing.—Division 4 of the Interstate Commerce Commission has authorized this company to issue \$9,400,000 of series B first mortgage 3¾ per cent bonds, maturing in 1985, sold at 98.25 to Halsey, Stuart & Company and others, the proceeds of which are to be applied to the retirement of an equal principal amount of series A first mortgage 4 per cent bonds, and to issue nominally an additional \$1,244,000 of series B bonds to replace a like principal amount of series A bonds pledged with the Reconstruction Finance Corporation, which are to be surrendered by that agency. The \$9,400,000 of series A bonds outstanding

are held by the R. F. C., with which an agreement has been reached for their retirement at 103. The transaction is expected to result in a slight net reduction in interest charges, to extend maturities about 18 years, and to free the company from indebtedness to the R. F. C., thus improving its credit standing.

CHICAGO, AURORA & ELGIN.—Revamp Plan Approved.—Federal Judge Barnes at Chicago last week approved a petition asking for reorganization of the Chicago, Aurora & Elgin which, for the past 13 years, has been in equity receivership. Arthur L. Schwartz, Chicago attorney, has been appointed trustee.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—Equipment Trust Certificates.—Division 4 of the Interstate Commerce Commission has authorized this company to assume liability for \$1,570,000 of 1½ per cent equipment trust certificates, sold to the Northern Trust Company and Northwestern National Bank of Minneapolis at 100.273, in connection with its purchase of two 1,000-hp. and three 660-hp. Diesel-electric switching locomotives, 400 50-ton box cars and 100 50-ton hopper cars at a total cost of \$2,104,566.

DELAWARE, LACKAWANNA & WESTERN.—Merger of Oswego & Syracuse.—This company has applied to the Interstate Commerce Commission for authority to acquire by merger the property of a leased line, the Oswego & Syracuse, by exchange of cash and new Oswego & Syracuse division mortgage bonds for the 22,194 shares of O. & S. stock outstanding, and also to issue \$1,109,700 of these bonds, on which the fixed interest rate would be 4 per cent, with an additional 2 per cent contingent on earnings and adjustments of tax litigation. The transaction is expected to result in a reduction in fixed charges and simplification of capital structure.

FONDA, JOHNSTOWN & GLOVERSVILLE.—Annual Report.—The 1944 annual report of this road shows a net income, after interest and other charges of \$131,018, as compared with a net income of \$147,600 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
RAILWAY OPERATING REVENUES	\$906,765	+\$35,878
Maintenance of way and structures	40,378	+7,041
Maintenance of equipment	115,533	-4,353
Transportation	359,018	+23,288
TOTAL OPERATING EXPENSES	610,920	+61,672
NET REVENUE FROM OPERATIONS	295,844	-25,796
Railway tax accruals	106,628	+69,425
RAILWAY OPERATING INCOME	189,217	-95,219
Net rents—Dr	12,716	+754
NET RAILWAY OPERATING INCOME	176,500	-95,974
Other income	42,478	+8,812
TOTAL INCOME	218,979	-87,160
Rent for leased roads	44
Interest on funded debt—		
Fixed interest	23,837	-299

TOTAL FIXED CHARGES	32,281	+6,039
CONTINGENT CHARGES		
Interest on funded debt		
—contingent interest	27,117
NET INCOME	131,018	-16,582

GREAT NORTHERN.—Annual Report.—During 1944, the Great Northern provided the greatest volume of freight and passenger transportation in its history. Operating revenues of \$207,657,795 exceeded those of 1943—the previous record year—by more than 7 millions, while net income, after all expenses and charges, was \$23,396,966, as compared with \$19,590,548 for 1943.

Five bond issues aggregating \$119,887,700 in principal amount were retired in 1944. Necessary funds were secured by the use of treasury cash and the sale of \$100,000,000 of 3½ to 3¼ per cent bonds at a premium of \$645,500. Annual fixed charges will be reduced to approximately \$10,000,000 for 1945 compared with \$19,328,227 ten years ago, and nearly \$90,000,000 of debt maturing in 1946, 1948 and 1952, has been retired.

GULF, MOBILE & OHIO.—New Director Elected.—George Pecaro, an executive of the Flintkote Company, was elected a member of the board of directors of the Gulf, Mobile & Ohio, at a stockholders meeting held recently in Mobile, Ala.

JAMESTOWN, WESTFIELD & NORTHWESTERN.—Control.—Division 4 of the Interstate Commerce Commission has authorized Murray M. Salzberg, Harry E. Salzberg, Meyer P. Gross and Morris H. Snerson to acquire control through stock ownership of this 32.2-mile road, and also of the Unadilla Valley and the Southern New York. The first named individual owns a majority of the voting stock of the three carriers, and the four together own all of the voting stocks. They also control indirectly the Arkansas Valley, which no longer owns or operates a railroad, but has power to do so. So long as this power is not exercised, I. C. C. authority to exercise control through stock ownership is not required, the division held.

LOUISVILLE & NASHVILLE.—Annual Report.—The 1944 annual statement of this road shows a net income, after interest and other charges, of \$18,607,778, as compared with a net income of \$21,213,757 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	4,745.62	+78
RAILWAY OPERATING REVENUES	\$214,779,541	+\$5,980,239
Maintenance of way and structures	22,825,245	+3,444,671
Maintenance of equipment	35,874,624	+4,096,894
Transportation	63,602,772	+5,391,374
TOTAL OPERATING EXPENSES	131,882,614	+13,730,180
Operating ratio	61.40	+4.81
NET REVENUE FROM OPERATIONS	82,896,927	-7,749,941
Railway tax accruals	63,670,261	-4,281,875
RAILWAY OPERATING INCOME	19,226,666	-3,468,066
Net rents	3,410,463	+591,794

NET RAILWAY OPERATING INCOME	22,637,129	-2,876,272
Total other income	4,495,363	-26,361
TOTAL INCOME	27,132,491	-2,902,633
Rent for leased roads and equipment	381,827	+80,135
Interest on funded debt	7,994,056	-356,719
TOTAL FIXED CHARGES	8,421,666	-302,633
NET INCOME	18,607,778	-2,605,979

MISSOURI PACIFIC.—Acquisition.—At this road's request, Division 4 of the Interstate Commerce Commission has dismissed without prejudice its application for authority to acquire control of the North Kansas City Bridge & Railroad Company through purchase of stock, and to operate under track-age rights over its lines.

NEW YORK CENTRAL.—Louisville & Jeffersonville Bridge Note.—Division 4 of the Interstate Commerce Commission has authorized the Louisville & Jeffersonville Bridge & Railroad, controlled by stock ownership by the Cleveland, Cincinnati, Chicago & St. Louis, a New York Central subsidiary, to issue a \$4,500,000 4 per cent promissory demand note to the Big Four to evidence advances made by it or the parent company for the payment of matured bonds.

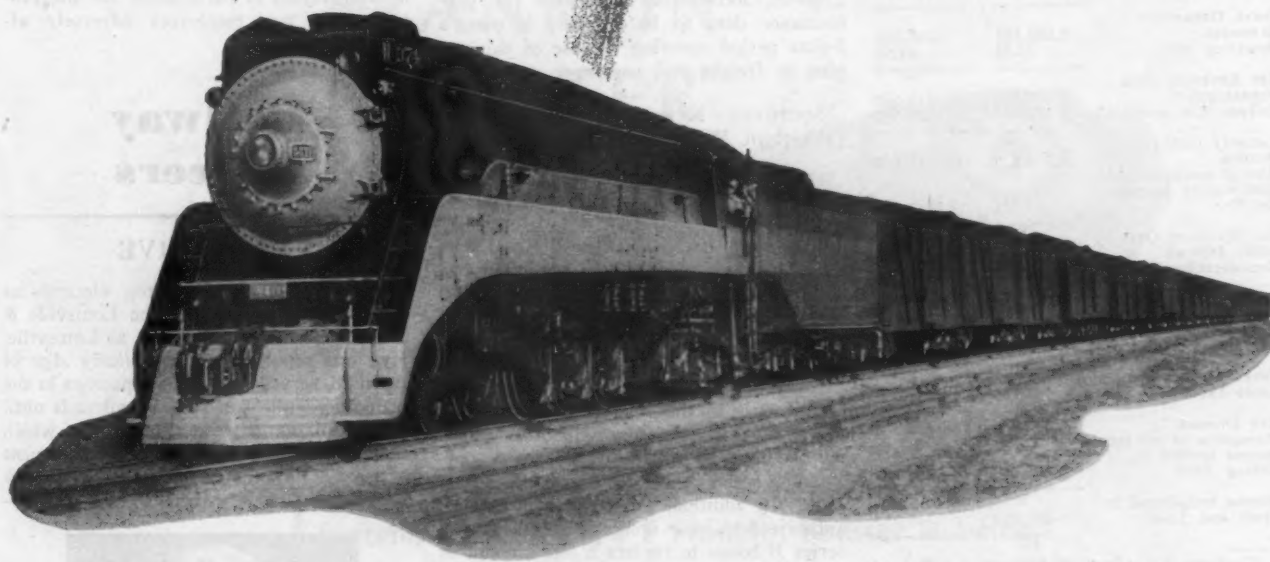
NEW YORK CENTRAL.—Equipment Trust Certificates.—Division 4 of the Interstate Commerce Commission has authorized this company to assume liability for \$7,500,000 of 1½ per cent equipment trust certificates, sold at 99.3799 to Salomon Brothers & Hutzler and others, the proceeds to be applied to the purchase of 2,000 40-ft. box cars being built by the road's Despatch Shops and 1,000 50-ft. box cars being built by the American Car & Foundry Company. (Previous item in *Railway Age* of April 14, page 689.) The division pointed out that the road expects to pay without refunding \$8,918,061 of current maturities in 1945, and to continue its debt retirement program to reduce the amount of outstanding securities carrying a higher interest rate than these certificates.

NEW YORK, CHICAGO & ST. LOUIS.—Awards Bonds.—On April 26, the Nickel Plate awarded \$58,000,000 of refunding mortgage series E bonds to Halsey, Stuart & Co., and associates, on a competitive bid of 99.779 for a 3¼ per cent coupon rate, an average annual interest cost of approximately 3.256 per cent. The new bonds embody a sinking fund provision designed to retire 34 per cent of the principal prior to maturity. The company netted \$57,871,820 on the sale, which marked the final step in the program of refunding announced by the road's directors last September. The bonds will replace the presently outstanding \$59,875,000 of refunding 4¼s of 1978 and September 1, 1945, has been set as the redemption date.

Compared with a total non-equipment debt of \$150,505,000 at the end of 1937, the Nickel Plate, on completion of the refunding, will have a non-equipment debt of \$100,000,000, a reduction of \$50,505,000 since that time. Compared with 1937 interest charges of \$7,357,000, annual interest requirements on debt outstanding at the

LIMA-BUILT 4-8-4 LOCOMOTIVES FOR "HOT-SHOT" FREIGHT SERVICE!

The building of a large postwar volume of L. C. L. freight traffic will depend on prompt deliveries and economical operation. This in turn means that the railroads which go after this business must be equipped to haul freights on passenger train schedules.



Lima super-power 4-8-4s are expressly designed to give such service. These are the locomotives that power the Southern Pacific "Overnights," on the Los Angeles-San Francisco run. They are the same locomotives that speed the famous "Daylights." The Southern Pacific now has a fleet of 60 of these Lima 4-8-4s. They will win traffic for any railroad.



LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

completion of this financing will be approximately \$3,815,000.

The Nickel Plate's mortgage debt structure will consist of a single mortgage—the refunding mortgage. This will be a first lien on all of the company's lines, totaling approximately 1,687 miles. Under this mortgage there will be outstanding in the hands of the public \$100,000,000 of bonds, including the \$42,000,000 of series Ds of 1975, sold last December.

PITTSBURGH & WEST VIRGINIA.—Annual Report.—The 1944 annual report of this road shows a net income, after interest and other charges of \$1,550,866, as compared with a net income of \$1,420,712 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	136.32	
RAILWAY OPERATING REVENUES	\$7,273,057	-\$449,155
Maintenance of way and structures	1,253,828	-5,232
Maintenance of equipment	1,347,596	-96,359
Transportation	1,821,865	-147,665
TOTAL OPERATING EXPENSES	5,007,501	-230,094
Operating ratio	68.85	+1.02
NET REVENUE FROM OPERATIONS	2,265,556	-219,060
Railway tax accruals*	472,927	-226,588
RAILWAY OPERATING INCOME	1,792,629	+7,528
Hire of equipment and joint facility rents—Net Cr.	263,451	+165,257
NET RAILWAY OPERATING INCOME	2,056,080	+172,785
Non-operating income	279,951	-84,090
GROSS INCOME	2,336,030	+88,695
Miscellaneous rents	249	
Interest on funded debt	760,706	-34,207
TOTAL DEDUCTIONS FROM GROSS INCOME	785,165	-41,459
NET INCOME	1,550,866	+130,154
Disposition of net income:		
Income applied to sinking fund	665,008	+65,102
Income transferred to Profit and Loss	885,858	+65,053

* Includes an accrual of \$106,426 for Federal Income Tax.

SOUTHERN.—Annual Report.—The 1944 annual report of this road shows a net income of \$15,367,214 as compared with a net income of \$20,528,589 in 1943. Selected items from the income statement follow:

	1944	Increase or Decrease Compared With 1943
Average Mileage Operated	6,508.83	-0.08
RAILWAY OPERATING REVENUES	\$260,978,544	+\$15,446,493
Maintenance of way and structures	30,654,358	+3,737,547
Maintenance of equipment	40,980,700	+3,855,367
Transportation	74,871,356	+12,863,152
TOTAL OPERATING EXPENSES	156,911,481	+20,307,328
Operating ratio	85.66	+1.34
NET REVENUE FROM OPERATIONS	104,067,063	-4,860,835
Taxes*	66,641,178	-3,796,058
Hire of equipment	2,792,504	+1,183,787
Joint facility rents	1,217,540	+80,352

NET RAILWAY OPERATING INCOME	33,415,841	-2,328,916
Total other income	3,518,811	+675,593
TOTAL INCOME	36,934,652	-1,653,323
Rent for leased roads and equipment	2,891,429	-104,671
Interest on funded debt	11,352,797	-311,853
TOTAL FIXED CHARGES	14,323,305	-397,055
BALANCE TRANSFERRED TO EARNED SURPLUS—UNAPPROPRIATED	15,367,214	-5,161,375

* After deduction of Post War Refund of Excess Profits Tax.

NEW YORK, ONTARIO & WESTERN.—R. F. C. Loan.—In asking Interstate Commerce Commission authority to issue \$1,695,000 of 3 per cent equipment trust certificates for a loan of that amount from the Reconstruction Finance Corporation, this road has modified its notice of intent to borrow \$1,900,000 for the purchase from the Electro-Motive Division of General Motors Corporation of 4 5,400-hp. and one 2,700-hp. diesel electric locomotives. The modification results from an arrangement with the Standard Oil Development Company under which that company will advance the road \$249,341, the cost of the 2,700-hp. locomotive, in return for performance data to be supplied it over a 3-year period covering the use of this engine in freight and passenger service.

SOUTHERN NEW YORK.—Control.—See Jamestown, Westfield & Northwestern.

UNADILLA VALLEY.—Control.—See Jamestown, Westfield & Northwestern.

VIRGINIAN.—Refinancing.—Division 4 of the Interstate Commerce Commission has authorized this company to issue \$60,000,000 of series B 3 per cent first lien and refunding bonds, due in 1995, sold at 105.669 to the Mellon Securities Corporation, Halsey, Stuart & Company and others, the average annual cost to the road being about 2.79 per cent. The proceeds, with other funds, will be used to retire \$60,044,000 of outstanding series A 3½ per cent bonds due in 1966. In addition, the company has been authorized to issue nominally \$9,544,000 of series B bonds to replace a like amount of series A bonds held in the road's treasury. (Previous item in *Railway Age* of April 7, page 647.) A net saving of interest of \$8,945,250 is expected to result from the transaction, and a more rapid retirement of fixed-interest debt will result.

Average Prices Stocks and Bonds

	May 1	Last week	Last year
Average price of 20 representative railway stocks	54.31	54.17	39.50
Average price of 20 representative railway bonds	98.59	97.86	87.71

Dividends Declared

Cleveland & Pittsburgh.—7% gtd., 87½¢; special gtd., 50¢; both quarterly, both payable June 1 to holders of record May 10.
 Delaware & Hudson.—\$1.00, quarterly, payable June 20 to holders of record May 28.
 Montgomery & Erie.—17½¢, semi-annually, payable May 10 to holders of record April 30.
 Nashville, Chattanooga & St. Louis.—\$1.00, payable June 1 to holders of record May 9.
 Norfolk & Western.—\$2.50, quarterly, payable June 9 to holders of record May 16.
 Reading.—4% 1st preferred, 50¢, quarterly, payable June 14 to holders of record May 24.
 Southern.—75¢, payable June 15 to holders of record May 15.

Abandonments

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—On further consideration of this road's line abandonment authorized in Finance Docket 14025 proceedings, Division 4 of the Interstate Commerce Commission has extended for a further period of two years its reservation of jurisdiction for the protection of any employees adversely affected.

LOUISIANA & ARKANSAS.—Division 4 of the Interstate Commerce Commission has extended for a further period of two years its reservation of jurisdiction with respect to the protection of employees who may be adversely affected by this road's line abandonment under the division's authorization in Finance Docket 14044.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—On further consideration of this road's line abandonment authorized in Finance Docket 14017 proceedings, Division 4 of the Interstate Commerce Commission has extended for a further period of two years its reservation of jurisdiction for the protection of any employees adversely affected.

Railway Officers

EXECUTIVE

John E. Tilford, whose election as vice-president—traffic—of the Louisville & Nashville, with headquarters at Louisville, Ky., was reported in the *Railway Age* of April 28, served in various capacities in the traffic department of several railroads until the installation of federal control at which time he was assistant general freight agent of what is now the Atlanta, Birmingham & Coast. On January 1, 1918, he was ap-



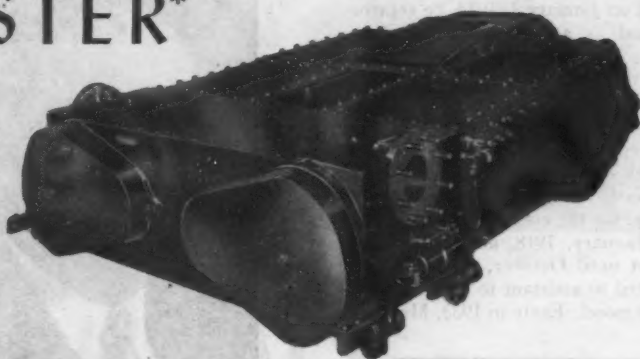
John E. Tilford

pointed assistant general freight agent of a group of railroads in the South, and also served as chairman of the general routing committee, southern region, of the United States Railroad Administration, and as a member of the Atlanta District Freight

20 READING locomotives



... being equipped
with the new
TYPE "E"
FRANKLIN
BOOSTER*



TO HELP speed heavy traffic on the Reading Railway System, the new Type E Franklin Booster is being installed on twenty locomotives.

Based on experience gained from thousands of Franklin Boosters in service all over the country, the Type E has been expressly designed to meet the increasingly exacting requirements of current steam locomotive operation.

The Type E saves starting time by making possible a quicker pick-up; it enables the locomotive to accelerate rapidly to road speed and maintain speed on grades.

*Trade Mark Reg. U. S. Pat. Off.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO

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Committee. In 1920, Mr. Tilford went with the L. & N., as assistant to the freight traffic manager, with headquarters at Louisville, and eight years later he was elected chairman of the Southern Freight Association, with headquarters at Atlanta, Ga. He returned to the Louisville & Nashville on February 15, 1937, as assistant vice-president—traffic—with headquarters at Louisville, the position he held at the time of his election to the vice-presidency.

Leonard B. Allen, whose appointment as vice-president of the Chesapeake & Ohio with headquarters at Cleveland, Ohio, was announced in the *Railway Age* of April 21, was born at Lexington, Ky., on April 19, 1879, and was graduated in civil engineering from Kentucky State University in 1899. He entered railway service the same year as a rodman on the Southern, and in August, 1899, he went with the C. & O. as a levelman on the location of the Big Sandy division. He served on location and construction work until January 1, 1905, when he was appointed assistant in the office of the engineer, maintenance of way, at Richmond, Va., and a year later he was advanced to division engineer of the Kentucky division, with headquarters at Ashland, Ky. Mr. Allen was promoted to engineer, maintenance of way, of the Kentucky general division at Covington, Ky., on May 1, 1910, and on January 1, 1914, he returned to Richmond as assistant chief engineer. One month later he was named superintendent of the Huntington and Big Sandy divisions at Huntington, W. Va., being promoted to general superintendent of the Western general division with the same headquarters on July 1, 1916. Mr. Allen was advanced to superintendent, maintenance of way, for the entire system at Huntington in January, 1918, and he remained in that post until October, 1926, when he was promoted to assistant to the vice-president at Richmond. Early in 1933, Mr. Allen



Leonard B. Allen

was appointed assistant to the executive vice-president of the C. & O., and the Nickel Plate, and later of the Pere Marquette, with headquarters at Cleveland, and in May, 1940, he was further advanced to assistant to the president of the three roads. He was named assistant to the president—assistant vice-president of the Chesapeake & Ohio in April, 1943, and he remained

in that post until his recent promotion to vice-president.

C. R. Zarfoss, assistant to the president of the Western Maryland at Baltimore, Md., has been named vice-president, traffic, with the same headquarters, succeeding Edward R. Bardgett, whose retirement on May 1 was announced in the *Railway Age* of April 28.

Horace M. Warden, chief mechanical officer of the Missouri-Kansas-Texas at Parsons, Kan., has been elected vice-president and general manager with headquarters at Dallas, Tex., succeeding Frank W. Grace, whose death on March 1 was reported in the *Railway Age* of March 10.

FINANCIAL, LEGAL AND ACCOUNTING

William F. Kennedy, whose promotion to comptroller of the Louisville & Nashville, with headquarters at Louisville, Ky., was reported in the *Railway Age* of April 28, was born at Louisville on July 15, 1883, and entered railway service with the L. & N., in 1900 as a clerk of the auditor of receipts. He subsequently held several other positions until October, 1910, when he was promoted to general bookkeeper in



William F. Kennedy

the comptroller's office at Louisville. Two years later he was advanced to statistician, and in 1914 to valuation accountant, with the same headquarters. On March 1, 1919, Mr. Kennedy was promoted to auditor, to serve during the period of federal control, and in 1920 he was further promoted to auditor of capital expenditures. On March 1, 1921, he was advanced to assistant comptroller, the position he held at the time of his new appointment.

Herbert H. Brown, assistant auditor of freight receipts of the Great Northern, at St. Paul, Minn., has been promoted to auditor of freight receipts with the same headquarters succeeding **Charles F. Bartelheim**, who has retired after 46 years service. **Albert V. Bell**, clerk in the office of the auditor of freight receipts, has been advanced to assistant auditor of freight receipts, replacing Mr. Brown.

Edward A. Callin, whose promotion to senior assistant general auditor of the Union Pacific, with headquarters as before at Omaha, Neb., was reported in the *Railway*

Age of April 21, was born at Shakespeare, Ont., on December 4, 1881, and attended a business college in Canada. He entered railway service in February, 1909, as a clerk in the statistical bureau of the Union Pacific at Omaha, later being advanced successively to head clerk of that bureau, office accountant in the office of the auditor of disbursements and chief clerk of the latter office. From May, 1919, to August,



Edward A. Callin

1922, Mr. Callin served with the accounting division of the U. S. Railroad Administration as accountant in charge of the examination of accounts on various railroads, returning to the Union Pacific on the latter date as accountant on the staff of the general auditor at Omaha. In September, 1941, he was promoted to general auditor, the position he held at the time of his new appointment.

Frank E. Martin, general auditor of the Illinois Central, with headquarters at Chicago, has been appointed comptroller, a change of title.

Lewis D. Brown, whose promotion to assistant general auditor of the Union Pacific, with headquarters at Omaha, Neb., was reported in the *Railway Age* of April 28, was born at Macon, Mo., on June 15, 1892, and received his higher education at



Lewis D. Brown

Westminster College, Fulton, Mo. He entered railway service on December 1, 1910, as a clerk of the accounting department of the St. Joseph & Grand Island (now a part of the Union Pacific), at St.



IN THESE URGENT DAYS

when every locomotive must be worked to capacity, it is vitally important to make the most efficient and economical use of fuel.

In oil-burning locomotives the fire brick lining should be properly maintained at all times to secure maximum efficiency from every gallon of fuel.

The use of Security fire brick assures long and satisfactory service, under every kind of operating condition.

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Locomotive Combustion Specialists

Joseph, Mo. He served in several capacities, with time out to enter the armed forces during World War I, until January, 1936, when he was appointed assistant head clerk of the books bureau of the U. P., at Omaha. In April, 1939, he was promoted to chief clerk to the auditor, with the same headquarters, and later served as assistant chief clerk and general clerk of the auditor. In February, 1943, Mr. Brown became an accountant in the office of the general auditor, the position he held at the time of his new appointment.

OPERATING

J. L. Kendall has been appointed trainmaster of the Missouri Pacific, with headquarters at Nevada, Mo., succeeding **W. H. Wood**, deceased.

G. B. Brien, assistant division superintendent of the Canadian National at Smithers, B. C., has been appointed night chief dispatcher, with headquarters at Edmonton, Alta., on account of ill health.

James B. Diven, superintendent of motive power of the Pennsylvania's Eastern Ohio division at Pittsburgh, Pa., has been named assistant to the general superintendent of that division.

Clarence R. Tucker, assistant general manager of the Coast Lines of the Atchison, Topeka & Santa Fe at Los Angeles, Cal., has been appointed acting general manager, with the same headquarters, succeeding to the duties of **E. E. McCarty**, who has accepted a temporary assignment with the Office of Defense Transportation.

N. L. Patterson, superintendent of dining cars of the Illinois Central at Chicago, has been promoted to general superintendent of dining cars, with the same headquarters. **P. E. Bickenbach**, assistant superintendent of dining cars, has been advanced to superintendent of dining cars, with headquarters as before at Chicago, succeeding Mr. Patterson.

M. G. Breuner, trainmaster of the Union Pacific at The Dalles, Ore., has been promoted to assistant division superintendent, with headquarters at LaGrande, Ore. **J. F. Fehrenbacher**, train dispatcher at Albina, Ore., has been advanced to trainmaster, with headquarters at Centralia, Ore., succeeding **A. R. Brown**, who has been transferred to The Dalles, where he replaces Mr. Breuner, and **D. B. Pidcock**, assistant division superintendent at LaGrande, has been transferred to Albina.

W. L. More, superintendent of the Los Angeles division of the Atchison, Topeka & Santa Fe at San Bernardino, Cal., has been appointed acting assistant general manager of the Coast Lines, succeeding **Clarence R. Tucker**, whose appointment as acting general manager of the Coast Lines is reported elsewhere in this issue. **J. W. Murphy**, assistant division superintendent at Los Angeles, Cal., has been appointed acting superintendent of the Los Angeles division, replacing Mr. More.

William J. Meyer, whose retirement on May 1 as assistant to the general manager of the Jersey Central Lines at Jersey

City, N. J., was announced in the *Railway Age* of April 21, was born at Chicago on October 15, 1877, and entered railroading with the Chicago, Burlington & Quincy in February, 1910. After serving in various positions, including yardmaster, assistant trainmaster, and trainmaster, Mr. Meyer was appointed assistant division superintendent at Chicago, retiring from that post in January, 1944. The following month, however, he returned to active railway service as assistant to the general manager of the Jersey Central to specialize in operating problems accompanying war-time traffic, remaining in that post until May 1, when he returned to retirement.

V. C. Palmer, whose promotion to superintendent of the Detroit division of the Grand Trunk Western, with headquarters at Detroit, Mich., was reported in the *Railway Age* of April 21, was born at Chicago, and in 1911 he entered railway service as a ticket clerk of the Grand Trunk at Saginaw, Mich. He subsequently held various positions at Chicago and Detroit until 1940 when he was advanced to supervisor of wages, with headquarters at De-



V. C. Palmer

troit. In 1942 Mr. Palmer was promoted to assistant to the general manager, with the same headquarters, the position he held at the time of his new appointment.

Harry Fisher Burch, whose appointment as general superintendent of transportation of the Delaware & Hudson at Albany, N. Y., was announced in the *Railway Age* of April 7, 1945, was born at Louisville, Ky., on December 29, 1884, and entered railroading in 1897 as a clerk of the Louisville & Nashville at Louisville. He joined the Delaware & Hudson in 1907 as assistant general yardmaster at Schenectady, N. Y., transferring to special investigation work and taking charge of mail traffic for the general superintendent of transportation the following year. He served as assistant trainmaster on various divisions from 1912 until February, 1916, when he became chief clerk to the general superintendent of transportation. The following October he was appointed general superintendent of the Greenwich & Johnsonville (part of the Delaware and Hudson), and in 1917 he was named assistant to the general manager of the D. & H. In 1918 he was advanced to division superintendent, and in 1920 he became assistant to the general manager, transportation. Mr.

Burch was promoted to assistant general manager at Albany in 1923, the position he held at the time of his recent elevation to general superintendent of transportation.

George DeCamp Hughey, whose appointment as assistant general manager of the Delaware & Hudson at Albany, N. Y., was announced in the *Railway Age* of April 7, was born at Oakmont, Pa., on December 7, 1884, and was educated at Rensselaer Polytechnic Institute. After working as transitman for the Bureau of Surveys at Pittsburgh, Pa., from June, 1907, to January, 1909, and for the Carnegie Steel Co. at Mingo Junction, Ohio, until April, 1910, he entered railroading as a transitman with the Bessemer & Lake Erie at Greenville, Pa. He joined the Delaware & Hudson as inspector, maintenance of way, at Albany in January, 1913, and in August, 1917, he became division engineer at Plattsburg, N. Y., transferring to Oneonta, N. Y., in October, 1921. On May 1, 1925, Mr. Hughey was promoted to superintendent at Plattsburg, and in October, 1928, he was advanced to superintendent of transportation at Albany, the position he held at the time of his recent appointment as assistant general manager there.

TRAFFIC

John C. Harms, assistant freight traffic manager of the Pere Marquette, with headquarters at Chicago, has been transferred to Detroit, Mich.


William J. Landon, manager, sales and service, of the New York, New Haven & Hartford at Boston, Mass., has been appointed special representative with the same headquarters. **Frank C. Baker**, general traffic agent at New York, has been named manager, sales and service, at Boston, succeeding Mr. Landon.

A. L. Wallace, district freight agent of the Canadian Pacific at London, Ont., has been appointed lumber traffic agent at Montreal, Que., succeeding **J. J. Kelly**, who has retired after more than 32 years of service. **F. K. Hollyman** has been named district freight agent at London replacing Mr. Wallace.

Ross E. Rowland, general agent of the Jersey Central Lines at Albany, N. Y., has been appointed assistant industrial agent at New York, and **William D. Wakeman**, traveling freight agent at Albany, has been named general agent there succeeding Mr. Rowland. **Albert L. Postlethwait**, chief clerk to the chief traffic officer, has been named assistant to the general freight agent at New York.

J. H. Arnold, assistant general freight and passenger agent of the St. Louis Southwestern at Little Rock, Ark., has been transferred to Memphis, Tenn., where he replaces **W. D. May**, who died recently. **W. E. Thompson**, general agent at Atlanta, Ga., has been named assistant general freight and passenger agent at Little Rock succeeding Mr. Arnold, and **H. J. Breitenbach** has been appointed general agent at Atlanta relieving Mr. Thompson.

Eugene R. Roby, assistant to the freight traffic manager of the Louisville &



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The nearer we get the

Each stepping stone to Tokyo has been harder to take.

They said it couldn't come any worse than Guadalcanal. That even the nights were something you'd rather forget. Japs shrieking in the dark and rapping on trees and tossing rocks into foxholes—and now and then a grenade just to keep the boys guessing.

Then came Tarawa.

You heard how the landing boats got hung on a reef. How the boys had to wade in under cross-fire

from the enemy. They said Tarawa would go down as the worst.

Then came Iwo Jima.

They said, a mile offshore, in the barges, the sea boiled like vegetable soup from Jap shelling. It was full of chopped-up boats. They said the Japs' big guns were above and they just aimed down hill and let go. They said it cost us five times the price of Tarawa. They said Iwo was the worst.

Next?

Let's make 7 unlucky



harder they fall !

Well—there's Chichi Jima, Haha Jima—fifteen islands to go. And then, of course, the ultimate objective—Japan itself.

You can help lower the price we'll have to pay—by buying War Bonds. Bonds to give our boys equipment to throw at the enemy. For the more *equipment* they can throw at them, the fewer *lives* they will have to give.

How much are *you* investing to help preserve American lives?

for the Japs !

7th WAR LOAN

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Steam Division

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Nashville at Louisville, Ky., has been promoted to assistant freight traffic manager, and **Philo H. Goodwyn**, assistant to the vice president—traffic—at Louisville has been advanced to assistant to the freight traffic manager, succeeding Mr. Roby. **Joseph C. Kuebert**, assistant to the general freight agent, has been promoted to assistant to the freight traffic manager at Louisville, and **Joe S. Thompson**, commerce agent, has been advanced to assistant general freight agent. **Fred A. Weber**, chief clerk of the commerce branch of the traffic department, has been promoted to assistant to the freight traffic manager.

Edward H. Richards, assistant traffic manager of the Chicago & North Western at Chicago, has been promoted to freight traffic manager of the Chicago, St. Paul, Minneapolis & Omaha (part of the North Western System), with headquarters at St. Paul, Minn., succeeding T. J. Kenniff, whose death on April 7 was reported in the *Railway Age* of April 14. Mr. Richards was born at Baraboo, Wis., on December 8, 1897, and entered railway service in 1915 as an engine wiper at Itasca, Wis. In 1916 he became cashier and revisor in the freight office at Superior, Wis., and a short time



Edward H. Richards

later entered the U. S. Marine Corps. In 1918 he returned to railroad service as chief clerk in the traffic department of the North Western at Duluth, Minn., and three years later he was appointed assistant chief clerk in the general freight department of the Omaha at St. Paul, later being promoted to chief clerk. Mr. Richards was promoted to general agent for the North Western at St. Paul in 1935, and in 1938 he was transferred to Seattle, Wash. Later the same year he was advanced to assistant general freight agent at Minneapolis, Minn., and in April, 1941, he was promoted to the position he held at the time of his new appointment.

ENGINEERING & SIGNALING

Glen H. Trout, assistant chief engineer of the Union Pacific, has retired after 42 years of service.

K. L. Miner, former supervisor of bridges and buildings of the New York Central's Mohawk division at Albany, N. Y., who was recently honorably discharged as a captain in the Military Rail-

way Service after service overseas in Africa and Italy, has been appointed engineer of bridges, New York Central Lines Buffalo and East, with headquarters at New York, succeeding **John L. Beckel**, who has returned to his former position of assistant engineer in the office of the engineer of structures, Lines Buffalo and East, at New York. **George Auer, Jr.**, assistant engineer in the office of the engineer maintenance of way—system, has been promoted to division engineer of the Eastern division with headquarters as before at New York. Mr. Auer succeeds **C. A. Maxeiner**, who has been transferred to Syracuse, N. Y., relieving **P. H. Winchester**, who retired from active service on May 1.

MECHANICAL

Harold C. Wright, master mechanic of the Pennsylvania's Altoona works at Juniata, Pa., has been promoted to superintendent of motive power for the Eastern Ohio division, with headquarters at Pittsburgh, Pa., succeeding **James B. Diven**, whose appointment as assistant to the general superintendent of the Eastern Ohio division is announced elsewhere in these columns. **Herbert J. Kleine**, master mechanic of the Pittsburgh, Conemaugh and Monongahela divisions at Pitcairn, Pa., has been transferred to the Altoona works replacing Mr. Wright, and **Clair I. Clugh**, master mechanic of the Philadelphia Terminal division at Philadelphia, Pa., has transferred to Pitcairn relieving Mr. Kleine.

Columbus R. Rush, whose promotion to mechanical superintendent of the Missouri Pacific, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of April 7, was born at Cameron, Tex., on September 17, 1901, and received his higher education at the Arkansas State Teachers College. He entered railway service with the Missouri Pacific in February, 1923, as a machinist apprentice and four years later he became a machinist,



Columbus R. Rush

serving in that capacity at various points of the road. In 1930 Mr. Rush was promoted to roundhouse foreman and in 1941 he was advanced to general roundhouse and shops foreman at St. Louis. In August, 1944, he was promoted to assistant master

mechanic, with headquarters at DeQuincy, La., and in January of this year he was further advanced to master mechanic at Kingsville, Tex., the position he held at the time of his new appointment.

SPECIAL

J. Roscoe Miller, at present a commander in charge of the section of Internal Medicine, U. S. Naval Reserve at Washington, D. C., has been appointed medical director of the Chicago & North Western, with headquarters at Chicago. Mr. Miller will take over his new position upon completion of his assignment in the Navy.

OBITUARY

John W. Daniels, who retired in 1937 as a general agent of the Missouri Pacific, with headquarters at Springfield, Mo., died recently at his home in Carthage, Mo.

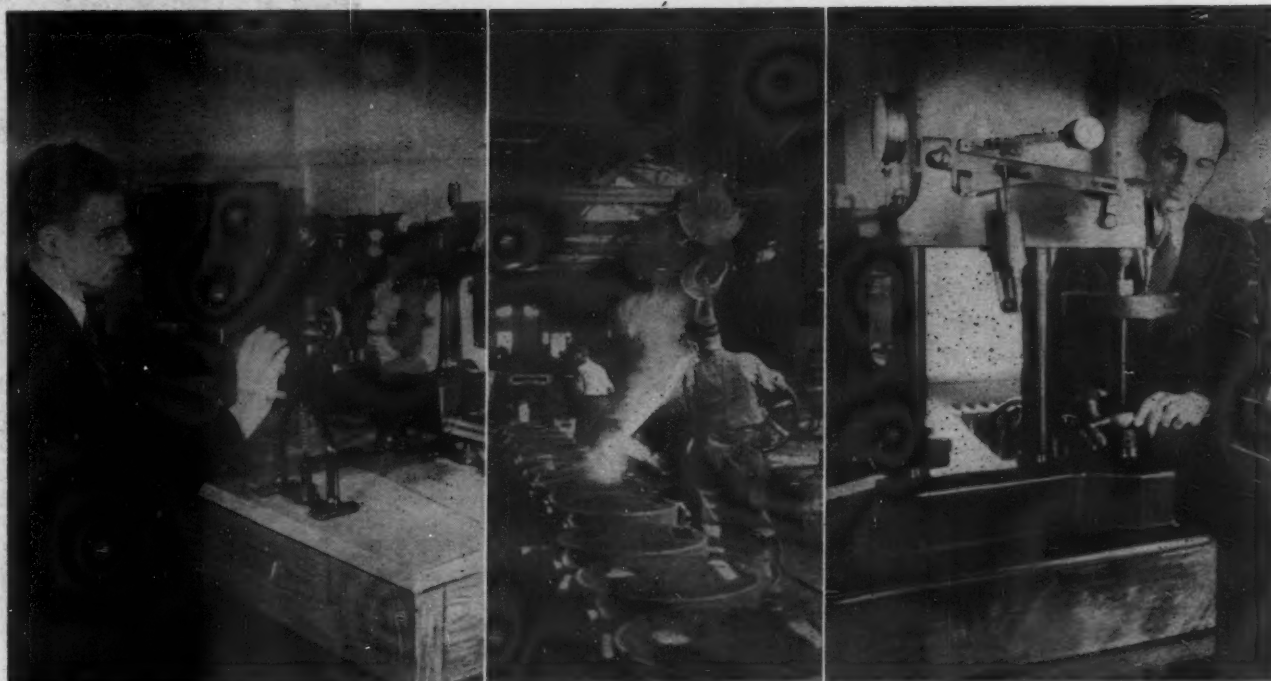
C. F. Larson, who retired in 1943 as superintendent of safety of the Missouri Pacific, died recently at his home in Aurora, Mo.

C. W. Strain, who retired in 1941 as assistant passenger traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., died recently in a hospital in that city.

Gilbert J. Bell, who retired in July, 1936, as district engineer of the eastern district of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., died at his home in Chicago on April 29.

O. F. Dalstrom, who retired in 1941 as engineer of bridges of the Chicago & North Western, with headquarters at Chicago, died at Princeton, Ill., on April 13. Mr. Dalstrom was born at Wyanet, Ill., on August 15, 1871, and attended Fremont (Neb.) Normal College and Rensselaer Polytechnic Institute, graduating in civil engineering from the latter in 1901. In June, 1901, he became a draftsman in the bridge and construction department of the Pennsylvania Steel Company (now the Bethlehem Steel Company) at Steelton, Pa., later serving as a shop inspector. He then served successively as a detailer on movable bridges for the Scherzer Rolling Lift Bridge Company; detailer on steel structures for the Riverside Bridge Company at Martin's Ferry, Ohio, and detailer and checker on steel bridge plans for the Pennsylvania Steel Company. He entered railway service on June 1, 1906, as a detailer, checker and designer on plans for bridges and other structures for the North Western and four years later he was promoted to chief draftsman in the office of the engineer of bridges. On March 1, 1917, Mr. Dalstrom was promoted to engineer of bridges, the position he held until his retirement.

After leaving the North Western, Mr. Dalstrom in 1942 went with the War Production Board as senior industrial specialist of the Division of Civilian Supply, and in June, 1943, he was elevated to assistant chief, way and structures, of the Transportation Equipment division, holding that position until early in 1944.



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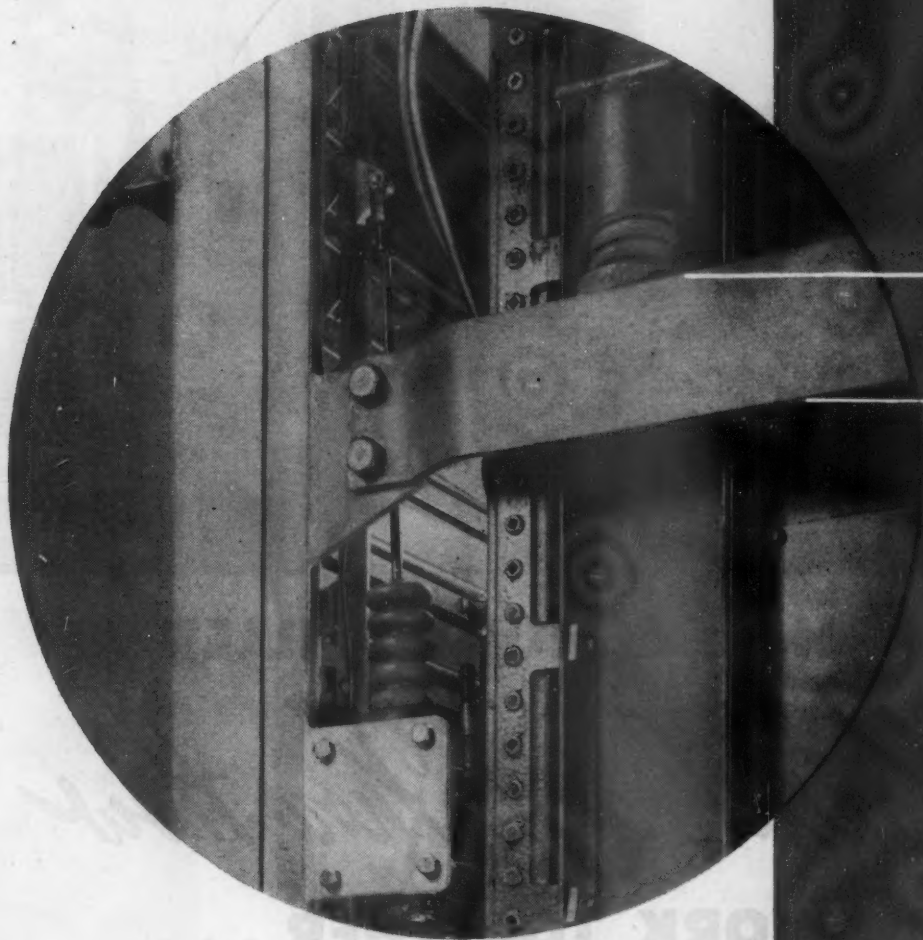
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This Automatic Temperature Control

The engine never takes a chill or runs a fever on Baldwin-Westinghouse Diesel Electric Locomotives, whether the units are operating in desert heat or arctic cold,

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The exclusive Monroe Airplane Type *Hydraulic Shock Absorber* principles have proved their dependability over millions of railway car miles*. This new Direct-Acting *Hydraulic Shock Absorber* unit incorporates these principles.

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Smoothing the ride under all road and climatic conditions, the new Monroe Direct-Acting *Hydraulic Shock Absorber* offers distinct advantages—

- checks progressive harmonic motion
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It is easily and quickly installed . . . fits right in . . . replacing one of the coil springs or snubbers in the spring cluster.

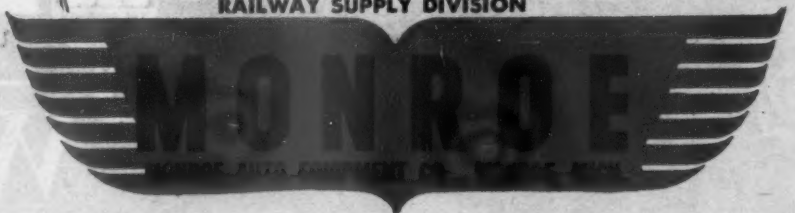


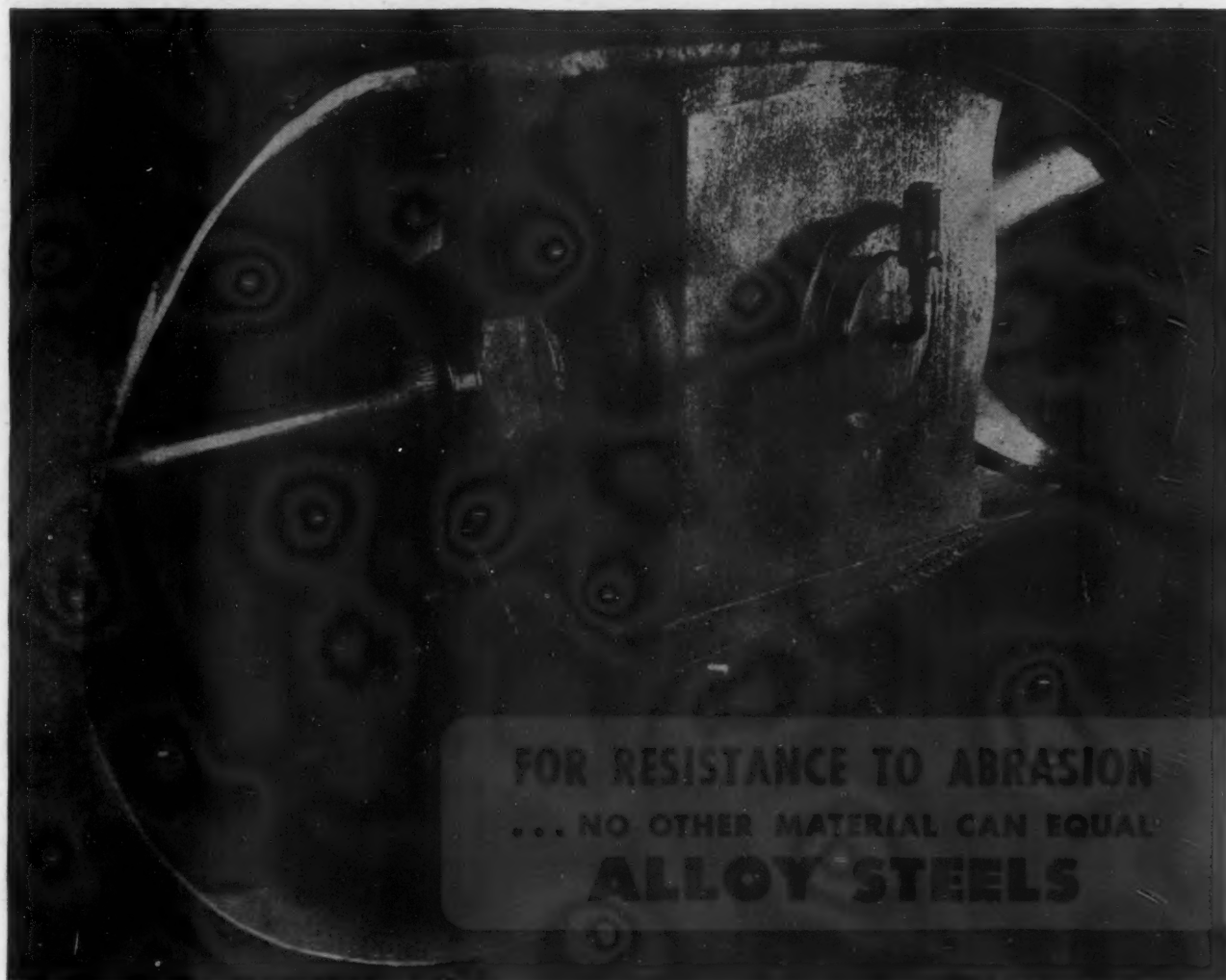
In use since 1938 on high speed crack streamliners, Monroe Airplane Type Hydraulic Shock Absorbers have smoothed the ride and saved thousands of man hours' maintenance time. They demonstrate the soundness of exclusive Monroe Hydraulic Shock Absorber principles.



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Alloy steels can be surface hardened or deep hardened to predetermined degrees of hardness with greater assurance of results than any other material. Their uniform response to hardening insures against non-hardened areas or soft spots in wearing surfaces.

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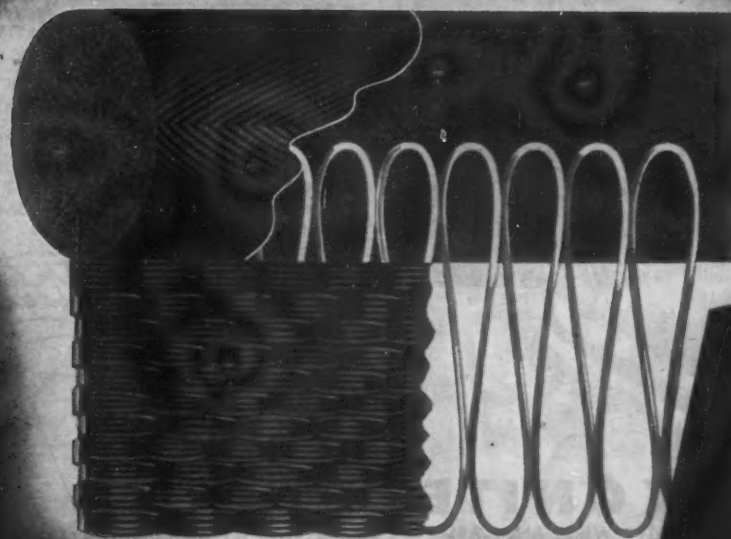
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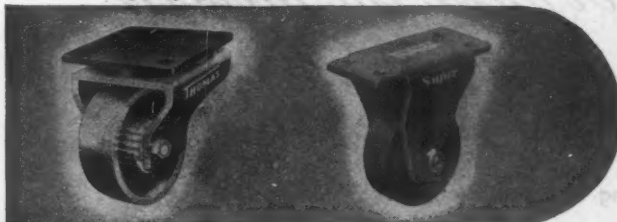
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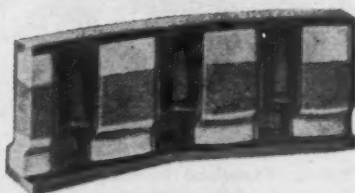
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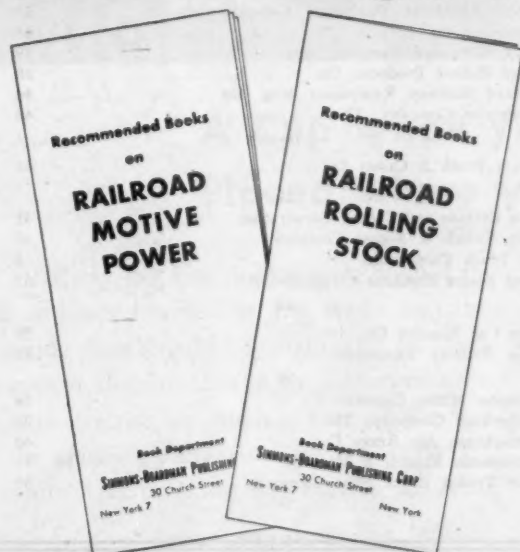
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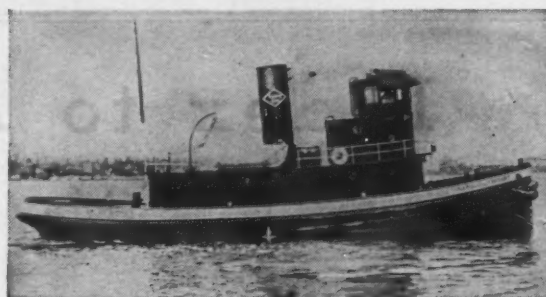
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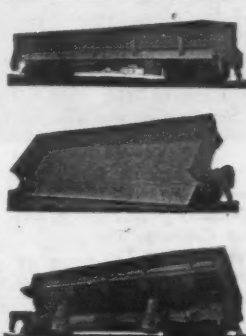
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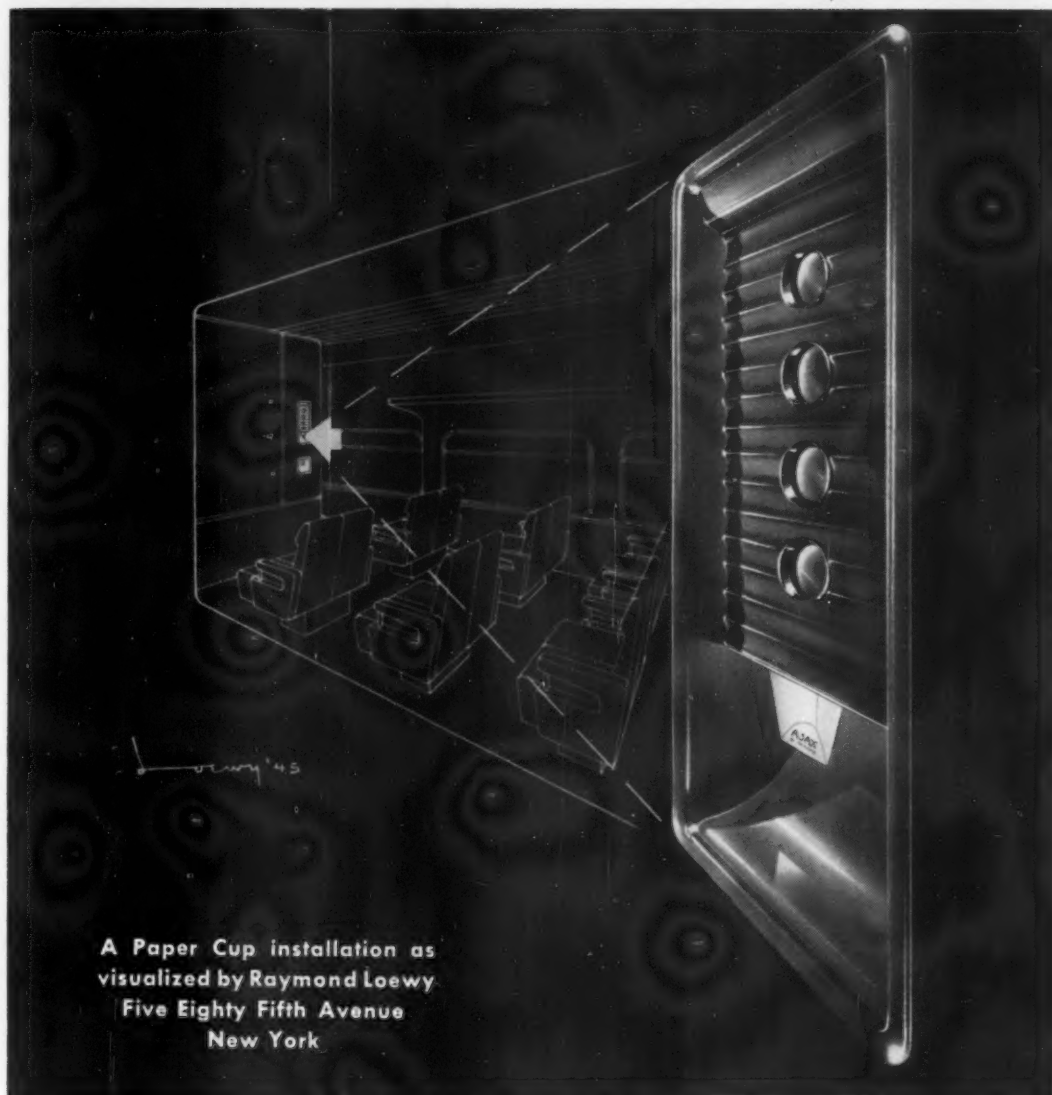
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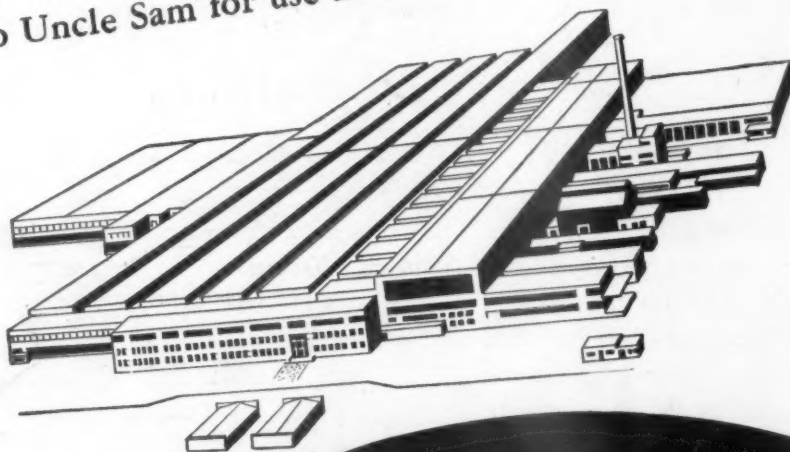


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